Natural Environment Research Council

ARASF

Atmospheric Research Airborne Support Facility

Flight Data Catalogue

Flight A576

16 September 1997

ACSOE

Flight Investigating Outflow from Hurricane Erica

FLIGHT FOLDER

Flight No. A 576

DATE: 16/9/97

Take off : 1215
Landing : 1930

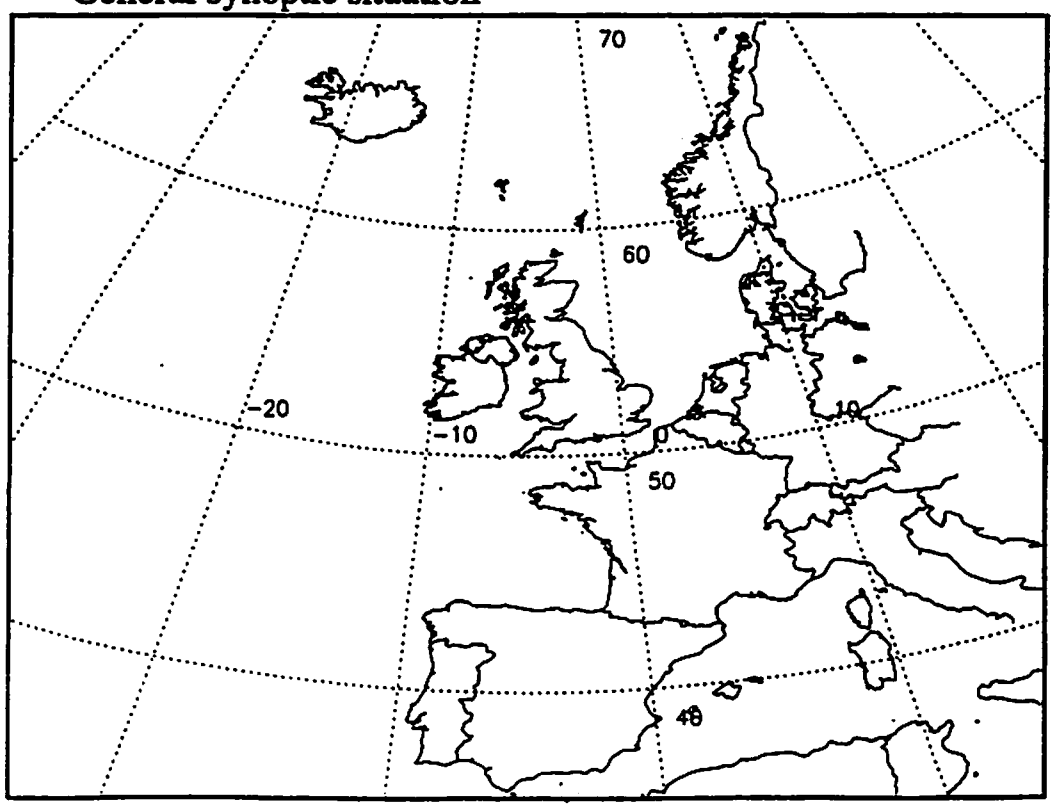
Aircraft Scientist : A. KATE
Flight Leader : I. PRICE
Others
CO : S. SCHMITTNER
NAVY : S. BAUMGARTE
ECAC : J. KENT
PILOTS : D. ARTHUR
CNR, PSAP ETC : K. DEWEY
FORECASTER : G. MILLS
PEARIDE : D. BANDY
PEARCA : T. GREEN

Captain : D. BANDALL
Co-pilot : C. O'BRIEN
Navigator : T. SIMPSON
Engineer : K. QUICK
Loadmaster : M. LENNARDS

+ P. MONKS
S. PEARCEY
K. LOW
C. REEVES
} MISSION SCIENTISTS

Trials Instructions MRF1 : ACSOE
Operating area : N. ATLANTIC NR AZORES

General synoptic situation



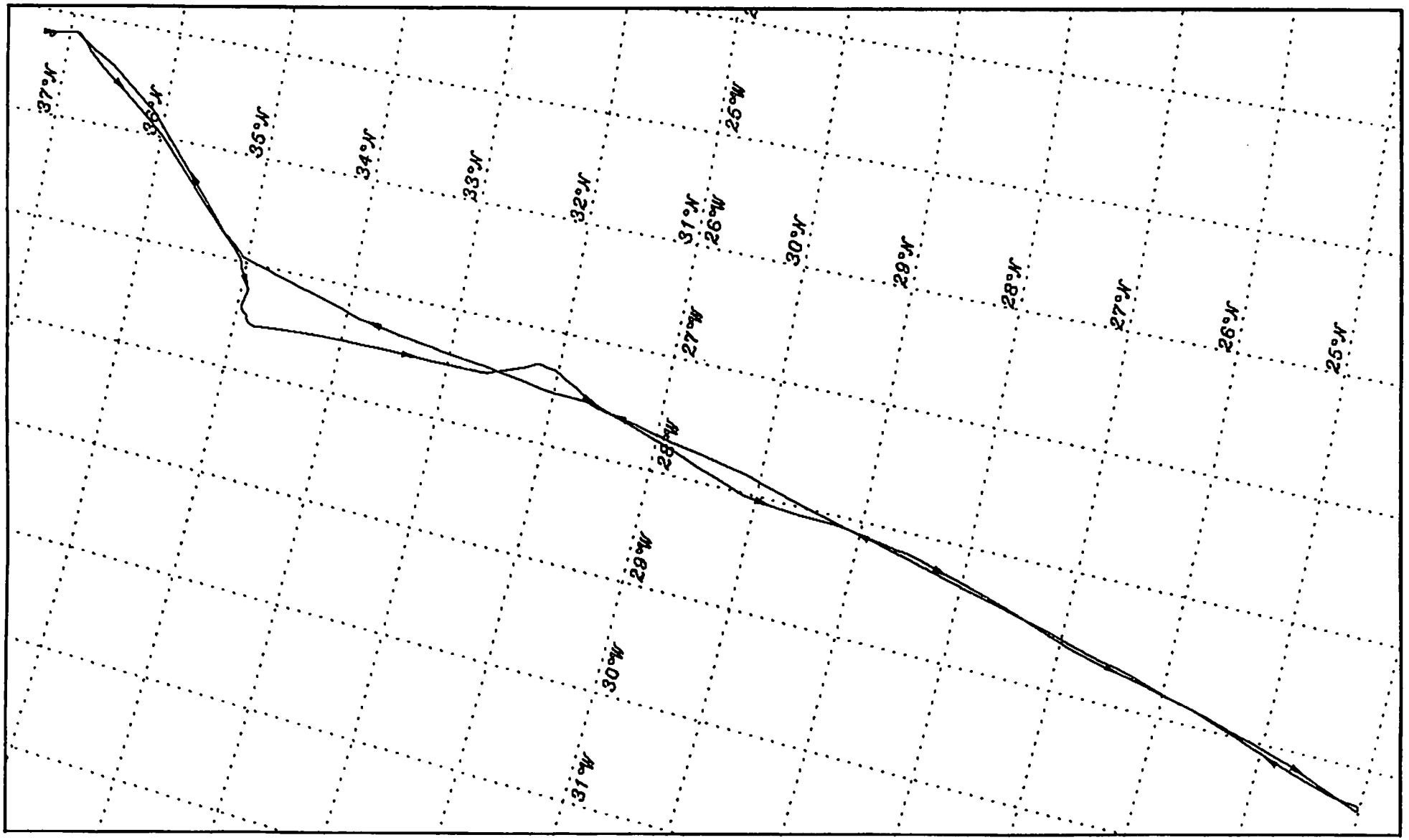
TIME :

A576, 16th September, 1997
ACSOE
North Atlantic near the Azores

Start time	End time	Event	Height(s)		Hdg	Comments
121650						Take off St Maria
122826	124329	R1	FL80		220°	
125031	132835	P1	50'	FL200	230°	Bottles filled at 1000', 5000',FL100,FL150,FL200
133010	135233	P2	FL200	50'	220°	
135233	142804	P3	50'	FL200	220°	Bottles filled @ FL50, FL100 FL150,FL200
142925	145759	P4	FL200	50'	210°	Bottles filled @ FL190
145759	153124	P5	50'	FL200	210°	Bottles filled @ 1000', FL170,FL200
153518	160821	P6	FL200	50'	210°	Bottles filled @ FL150, FL100,FL60,3000',1000', 500'
160821	170217	P7	50'	FL200	030°	Bottles filled @ 100', 1500',4000',FL80,FL120, FL170,FL190
161202	161629	R2	100'		025°	
170217	171814	P8	FL200	FL50	025°	
171814	172827	P9	FL50	FL150	020°	
173141	174211	P10	F150	FL50	020°	
174211	175252	P11	FL50	FL150	020°	
175252	180440	P12	FL150	FL50	015°	
180727	181807	P13	FL50	FL150	015°	
181807	182818	P14	FL150	FL50	015°	
183040	184102	P15	FL50	FL150	020°	
193319						Land St Maria

A576

GPS data
08:08:13 – 19:40:30



Interactive Processing Log

Flight No. A576 Date: 16/9/97 User: H. RICHER
Interactive by: I. RUSE / D. TODD-SMITH
Date: 29/9/97

Renav

KALMAN FILTERING USED

TWC

Profile plotted : NO
Line chosen : Profile (Whole flight) / Other

a = - 0.5818E+1
b = + 0.2682E-2
c = + 0.3467E-6

LWC

Heimann / Barnes

NOT USED

A576 ACSOE SCIENCE September 16, 1997

Aircraft Scientist Debrief:

Weather:

The weather was dominated by Tropical Storm Erica which passed to the north of the Azores during the night. As we proceeded to the south there was a clear transition into an airmass which was less cloudy, more hazy with a calmer sea.

Instrumentation:

Takeoff was delayed due to serious problems with the NOxy instrument. The high humidity during the night had caused excessive condensation around the dry-ice cooled detectors. The resultant flood was mopped up and the instrument dried out (with the help of a hairdrier from the hotel!) before the electrical power could be connected. Once airborne, there were no significant problems with the instrumentation.

Overview:

This was a successful sortie. The mission scientists were very pleased with the data collected during the flight. We did full depth sawtooths from Santa Maria out and high level sawtooths on the return track after a full depth stepped profile into and out of the most southerly point. The contrast between the two airmasses was clear, and the transition was clearly visible during the sawtoothing out and back.

AIRCRAFT SCIENTIST'S LOG

Aircraft Scientist: A. Kaye

Project: ACSOE
Flight No: A576

Date: 16/09/97
Page 1 **of** 5

Time GMT	Run Profile	Height	Heading INS	Latitude / Longitude	Other Information (eg: clouds, weather, visibility, winds, sea state etc.)
12:24:19	3000ft clear @3200	Pres / Rad / FL			wx moved slightly up to clear a thin layer of Sc cloud.
12:28:25	RI	080 Pres / Rad / FL	222	36.58 / -25.56	<1/8 broken cu below, clear above ... large cu ahead and on either side.
12:33:40	RI	080 Pres / Rad / FL	219	36.16 / -25.83	streets of very fine cu below, Sc ahead, some active cu. one ahead with a small anvil.
12:41.42	~~RI~~	Pres / Rad / FL			passing over a small linear small cu feature.
12:43:29	RI end	080 Pres / Rad / FL	226	35.57 / -26.44	Sc ahead with some active ahead. cloud top — cloud bottom —
12:50:26	PI start	50 Pres / Rad / FL	219	35. / -26.	DRIZZLE ON WINDOWS. 6/8 sc above, some gaps visible in cloud. 1016 seastate 4
		1000 Pres / Rad / FL			profile interrupted for NOxy and CO zeros at 1000ft.
		~~5000~~ Pres / Rad / FL			12:56:40 — some drizzle 12:57:51 — end of drizzle — 3300ft.
13:00:31		050 Pres / Rad / FL	281	34.95 / -27.27	NOxy zero, turned the a/c westward to miss bank of Cu.
		Pres / Rad / FL			Some very big cu on all sides. —
13:07:13		100 Pres / Rad / FL	281	34.83 / -27.55	8/8 sc below many big cu, clear above

AIRCRAFT SCIENTIST'S LOG

Aircraft Scientist: A. Kaye

Project: ACSOE
Flight No: A576

Date: 16/09/97
Page 2 **of** 5

Time GMT	Run Profile	Height	Heading INS	Latitude / Longitude	Other Information (eg: clouds, weather, visibility, winds, sea state etc.)
13:17:09	P1	150 Pres Rad FL	182	34.18 / -27.50	4/8 sc below. Some big cu - clear above.
13:28:39	P1 and	200 Pres Rad FL	184	34.40 / -27.49	Small cu fields below. clear above some Sc ahead
13:30:10	P2	200 Pres Rad FL	185	33.28 / -27.50	.
13:36:29		130 Pres Rad FL	183	32.87 / -27.50	Clear below and sc ahead. 13:39:42 resume profile.
13:52:33	P2 e P3s.	50 Pres Rad FL	206	31.89 / -27.41	Very Hazy. broken small cu below. clear above.
14:01:09		050 Pres Rad FL	202	31.54 / -27.55	passing just abeam to a large cu to starboard (13:59:00) some alto cu ahead. Some small cu fields below
14:08:25		100 Pres Rad FL	202	31.16 / -27.69	recommence climb @ 14:02:19 Small cu fields below! Some thin ci above to port clear above 33D
14:10:54		150 Pres Rad FL	202	30.66 / -27.84	very Dry layer @ 12400 14:14:20 1/8 ci above not very transparent 45° beld visible 14:19:26 Cs cirrostratus.
14:24:02		Pres Rad FL		30.29 / -27.96	apparent change in clouds below. Small cu ending and giving way to Sc Cs above and hazy below. Cs thickening to edge
		Pres Rad FL			
14:28:11	P8e P9s	200 Pres Rad FL	187	30.02 / -29.02	hazy below Cs Ahead. @ no cloud below but occasional small cu fields are visible.

Recommence 14:29:27.

AIRCRAFT SCIENTIST'S LOG

Aircraft Scientist: A. Kaye.

Project: ACSOE
Flight No: A576

Date: 16/09/97
Page 3 **of** 5

Time GMT	Run Profile	Height	Heading INS	Latitude / Longitude	Other Information (eg: clouds, weather, visibility, winds, sea state etc.)
14:41:06	P4 cont.	090 Pres Rad (FL)	185	29.13 / -28.00	Broken high level CS ahead, some small ~~towers~~ ~~Strato~~ cu below hazy layer below Nav II mis-cal @ end of P4
14:58:00	P4e P5s	50' Pres Rad FL	↓	28.30 / -28.24	7/8 ci above. Small cu and hazy. calm sea. 1020 sea state 4
		Pres Rad FL			1000 ft 15:00:08 all instruments zeroed. resume @ 15:02:50
		Pres Rad FL			Very hazy layer after inversion. CNC shows no structure, Ken going to investigate...
15:15:08		~~095~~ Pres Rad (FL)	197	27.38 / -28.47	haze layer below with some very small cu below. 5/8 ci above, clear ahead.
15:23:42		170 Pres Rad (FL)	193	26.84 / -28.64	layer just abv. FL105, 7 or 8 obs haze below, ci above and very small cu ~~at~~ at surface. Resume @ 15:26:44
15:31:24		200 Pres Rad (FL)	194	26.33 / -28.75	Same.
15:35:18	P6 ↓	200 Pres Rad (FL)	195	~~-28~~ 26.05 / -28.81	clear & hazy below (ie. now cloud) with ragged edge of ci above. Hazy ahead.
15:48:12	RC ↓	100 Pres Rad (FL)	191	25.28 / -28.98	FL150 15:40:50 Restart @ 15:42:40 FL100 — <1/8 small cu below Resume @ 15:49:08
15:53:22		060 Pres Rad (FL)	189	24.92 / -29.06	<1/8 thin cu below. Hazy ahead clear above. 20:3 Restarting 15:56:29
		Pres Rad FL			

AIRCRAFT SCIENTIST'S LOG

Aircraft Scientist: A. Kaye

Project: ACSOE
Flight No: A576

Date: 16/9/97
Page 4 **of** 5

Time GMT	Run Profile	Height	Heading INS	Latitude / Longitude	Other Information (eg: clouds, weather, visibility, winds, sea state etc.)
15:57:42	P6↘	3000 Pres Rad FL	194	24.57 / -29.15	3/8 cu below hazy ahead clear above wind swung around Restart 16:00:17 8 minutes ago.
		Pres Rad FL			~~1000 ft~~
		Pres Rad FL			1000 ft — 16:03:58 — 16:04:28 { cloud layer between 2000ft
		Pres Rad FL			500 ft — 16:05:41 — 16:07:18 { and 1500.
16:08:10	P↘	50 Pres Rad FL	194	24.15 / -29.9	clear and ~~clear~~ with ~2/8 cu above — 1020 sea state 3
16:12:02	P7↗	100 Pres Rad FL	9	24:14 / -29:29	aircraft turned around 16:12:02 Resume@ 16:16:29, and pointed for home.
		Pres Rad FL			2000 ft 16:20:21 Restart.
16:51:00	P↗	170 Pres Rad FL	12	26.21 / -28.75	small cu fields below, ci above.
16:55:17	P7↗	190 Pres Rad FL	6	26.48 / -28.69	less small cu below, more ci above — instrument zeros Restart 17:01:16
17:02:17	P7↗6 P8↘4	200 Pres Rad FL	10	27.00 / -28.57	clear above, ~~was~~ traces of cu near surface.
17:16:14	P8↘4 P9↗6	150 Pres Rad FL	12	28.27 / -28.30	hazy below old contrail → visible in shadow on surface, looks like a tadpole. etc. 20:10
17:29:27	P9↗6	150 Pres Rad FL	9	28.46 / -29.12	more active cu ahead and some sheets of sc

AIRCRAFT SCIENTIST'S LOG

Aircraft Scientist: A. Kaye

Project: AESOE **Flight No:** A576

Date: 16/9/97 **Page** 5 of 5

Time GMT	Run Profile	Height	Heading INS	Latitude / Longitude	Other Information (eg: clouds, weather, visibility, winds, sea state etc.)
17:31:48	P10 ↘ start	150 Pres Rad (FL)	11	29.11 / -25.09	large layer @ about FL95
17:42:11	P10 ↘ e P11 ↗ s	50 Pres Rad (FL)	10	30.07 / -27.87	Small cu fields about same active cu. 3/8 ci above
		Pres Rad FL			
18:04:40	P12 ↘ P13 ↗	50 Pres Rad (FL)	359	31.72 / -27.53	TOWERING cu ALL AROUND us. Rainbows visible under clouds and one cu with a lenticular cloud on top. start of P13: START: 18:07:37
		Pres Rad FL			
18:18:07	P13 ↗ e P14 ↘ s	150 Pres Rad (FL)		32.83 / -27.42	clouds have now changed, many more cu, with intermixed SC streets.
18:28:17	P14 e P15 ↗	50 Pres Rad (FL)		33.68 / -27.30	4/8 cu below, clear above. P15 start 18:30:40
18:48:02	P15 end	150 Pres Rad (FL)	8	34.59 / -27.09	Broken cu and sc below. clear above
		Pres Rad FL			instrument zero's
18:45:10		150 Pres Rad (FL)	11	34.91 / -26.99	END OF FORMAL SCIENCE — INSTRUMENT OPERATORS WILL DO CALS AND NOISE ARTIFACT
		Pres Rad FL			

POST FLIGHT REQUIREMENTS FORM

Flight No: 16/9/97 Date: 16/9/97 A/S Name: A. KAYE

Aircraft Scientist's Post Flight Requirements:

1. Are any copies of the flight folder required?
   YES [✓] NO [ ] for ..... SEVERAL FOR NONE .....

2. Flight data and folders will normally be discarded after 10 years, is this OK?
   YES [ ] NO [✓] If not OK, state period ..... INDEF .....

3. Is the flight part of an international project or major campaign?
   YES [✓] NO [ ] Name of Project ..... ACSOE .....

4. Do you want the video tape kept?
   YES [✓] NO [ ] How long? ..... INDEF .....

5. Has the Handheld camera or the Camcorder been used:
   YES [ ] NO [✓]
   If yes, do you want the handheld camera film processed:
   immediately [ ] or when the film is finished? [ ]

6. Do you want the cloud physics data kept?
   YES [ ] NO [✓]
   If yes, which disc / file do you want it stored in? .....

7. Do you want to do the interactive processing?
   YES [ ] NO [✓]

NOTE:

- Members of MRF Radiation and Cloud Physics groups are expected to meet their own requirements for data storage and non-standard processing.
- For non MRF users, Data Management Section will keep the processed data TEMPORARILY until the requirements are made known.
- Any other requirements for post-flight processing and data storage should be discussed with the Data Management Section.
- If copies of the Flight Folder are required, it is the responsibility of the Aircraft Scientist / User to produce them.

Flight Leader's Pre/In-Flight Check List

CHEK Flight No: A576 Date: 16/9/97 Page...1...of 2
for auto selection

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES INFLIGHT | *PREFLIGHT*
	REF +	5	0567	✓		Approx 0568
	REF -	7	2854	✓		Approx 2858
	AOSS	19	4095	(F/S) O/S	TORQUE 4·0	2047 st. and level
	AOA	18	4095	(F/S) O/S	TORQUE 3·0	2047 st. and level
	RD HT	37	0000	✓		As Indicated | 0000
	PR HT	8	3861	950	✓	As Altimeter
	CABP	14	3290	1000hPa		
	A/S	9	0087	✓		As ASI | 0000 – 0100
	UP1S	81	0401		JOLD	
	UP2S	82	0633	100	RED	
	UIRS	83	0282		IND2	
	UP1Z	84	0376			Approx 0147
	UP2Z	85	0144	✓		Approx 0149
	UIRZ	86	0270			Approx 2061
	UP1T	87	0682			As IAT
	UP2T	88	2371	+23		As IAT
	UIRT	89	0000			As IAT
	LP1S	91	0055		JOLD	
	LP2S	92	0144	-0	RED	
	LIRS	93	0013		IND2	
	LP1Z	94	0055			Approx 0150
	LP2Z	95	0149	✓		Approx 0146
	LIRZ	96	0013			Approx 2050
	LP1T	97	0000			As IAT
	LP2T	98	2362	+23		As IAT
	LIRT	99	0000			As IAT
	J/W	42	0996	0·0 ✓		As Indicated | 0000
	NEPH	47	[illegible]			
	HYGR	58	3474			
	HYCC	59	0706	✓		696–901
	FDEW	138	0197		CAL	DP = (DRSU/20)-100 C
	FSTA	139	0001			
	DTF	10	1938	23		
	DTC	11	6			
	NDTF	23	1787	23		same as De-Iced
	NDTC	24	6			
	INCT	48	271C			
	CCN	140	4			less than 4095 if ON
	TWCD	70	4095	✓		0000–4094 | 4095
	TSAM	72	0216	✓		0640–1860 | < *min*
	O3	100	0002			
	O3P	106	2716			P≃ (*DRSU* × 0.4) + 145*mB*
	O3RG	113	1780			

Flight Leaders' Pre/In-Flight Check List

BCDS for auto selection

GMT	PARA.	NO.	H/D	D.R.S.	DECODE	INSTR	EXPECTED VALUE
	FL NO	1	Hex	576			Flight No.
	GMTH	2	Hex	0095			Clock: First 4 No.s
	GMTM	3	Hex	0436			Clock: Last 4 No.s
	E/M	4	Hex	9			Event Mark Counter
	INCH	49	Dec				Multipxd Hkeeping
3766	3856 / 1684	3766	0481	3766	3687	3762	0940
	LATC	160	Dec	0000			Latitude
	LONC	161	Dec	0000			Longitude

Total Water Content Meter Check List

TOTW for auto selection Height: 0

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES
						INFLIGHT | *PREFLIGHT*
	TWCD	70	4095	✓		0001–4095
	TNOS	71	1271	✓		2000–3460 | < *min*
	TSAM	72	0446	✓		0640–1860 | < *min*
	TAMB	73	2586	✓		2400–3200
	TSRC	74	2258	✓		2160–2470
	HTR1	75	2084	✓		0000–4095 | < 4095
	HTR2	76	2127	✓		0000–4095 | < 4095
	ISRC	77	1027			0001–1230 | < *min*
	STAT	78	4088			4095 |
	EV1V	170	2043			
	EV2V	171	2043			
	NPWR	172	3327			
	EVIC	173	3968			
	EV2C	174	3968			

BROAD BAND RADIOMETER FIT (pre-Flight only)

	PARA NO	POSITION	DOME	COVERS	OBSCURERS
UPPER	81,84,87 82,85,88 83,86,89	Port Stbd Centre	Clear JOID Red RCI Silicon JN2	(Off) / On	Large / (Small)
LOWER	91,94,97 92,95,98 93,96,99	Port Stbd Centre	Clear JOID Red Silicon JN02	(Off) / On	

Flight Leader's Pre/In-Flight Check List

Flight No: A576 Date: 16/9/97 Page 2 of 2

CHEK for auto selection

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES INFLIGHT | *PREFLIGHT*
	REF +	5	0567	✓		Approx 0568
	REF -	7	2854			Approx 2858
	AOSS	19	1895	✓ F/S O/S	TORQUE	2047 st. and level
	AOA	18	1934	✓ F/S O/S	TORQUE	2047 st. and level
	RD HT	37	4095	7500		As Indicated | 0000
	PR HT	8	2408	8000	FL080	As Altimeter
	CABP	14	2648	740	✓	
	A/S	9	2644	257	✓	As ASI | 0000 – 0100
	UP1S	81	4095		JOID	
	UP2S	82	2075		RED	
	UIRS	83	0560		JNOL	
	UP1Z	84	4095		JOID	Approx 0147
	UP2Z	85	0142	✓	RED	Approx 0149
	UIRZ	86	0864		JNOL	Approx 2061
	UP1T	87	4095		JOID	As IAT
	UP2T	88	2443		RED	As IAT
	UIRT	89	0000		JNOL	As IAT
	LP1S	91	1937			
	LP2S	92	0162		✓	
	LIRS	93	0235			
	LP1Z	94	1940			Approx 0150
	LP2Z	95	0147		✓	Approx 0146
	LIRZ	96	0236			Approx 2050
	LP1T	97	0247			As IAT
	LP2T	98	2457			As IAT
	LIRT	99	0000			As IAT
	J/W	42	1477	07		As Indicated | 0000
	HYGR	58	2045	15		
	HYCC	59	0715			696–901
	FDEW	138	2186			DP = (DRSU/20)-100 C
	FSTA	139	0007			
	DTF	10	2741	26		
	DTC	11	6			
	NDTF	23	2735	26		same as De-Iced
	NDTC	24	6			
	INCT	48	2638			
	HEIM	141	2963			
	PRTC	142	2383	✓		approx 2380
	TWCD	70	2020	✓		0000–4094
	TSAM	72	1287	✓		0640–1860 | < *min*
	O3	100	0082			
	O3P	106	1045			P≃ (*DRSU* x 0.4) + 145*mB*
	O3RG	113	227			

Flight Leaders' Pre/In-Flight Check List

BCDS for auto selection

GMT	PARA.	NO.	H/D	D.R.S.	DECODE	INSTR	EXPECTED VALUE
	FL NO	1	Hex	576			Flight No.
	GMTH	2	Hex	0131			Clock: First 4 No.s
	GMTM	3	Hex	0450			Clock: Last 4 No.s
	E/M	4	Hex	21			Event Mark Counter
	INCH	49	Dec				Multipxd Hkeeping
3122	1284 / 3857	3123	0730	3109	3711	3111	0976
	LATC	160	Dec	0340	34		Latitude
	LONC	161	Dec	3783	27		Longitude

Total Water Content Meter Check List

TOTW for auto selection Height: ↗

GMT	PARA	NO	D.R.S.	DECODE	INSTRUMENT	EXPECTED VALUES	
						INFLIGHT	*PREFLIGHT*
	TWCD	70	1460	✓		0001–4095	
	TNOS	71	2577	✓		2000–3460	< *min*
	TSAM	72	1048	✓		0640–1860	< *min*
	TAMB	73	2737	✓		2400–3200	
	TSRC	74	2234	✓		2160–2470	
	HTR1	75	1149	✓		0000–4095	< 4095
	HTR2	76	1233	✓		0000–4095	< 4095
	ISRC	77	1023	✓		0001–1230	< *min*
	STAT	78	4095	✓		4095	
	EV1V	170	3491				
	EV2V	171	3142				
	NPWR	172	1665				
	EVIC	173	3998				
	EV2C	174	3998				

BROAD BAND RADIOMETER FIT (pre-Flight only)

	PARA NO	POSITION	DOME	COVERS	OBSCURERS
UPPER	81,84,87 82,85,88 83,86,89	Port Stbd Centre	Clear Red Silicon	Off / On	Large/Small
LOWER	91,94,97 92,95,98 93,96,99	Port Stbd Centre	Clear Red Silicon	Off / On	

Flight Leader's In-Flight Log

Flight No A 576 Date 16/9/97 Page 1 of 2

Video Tape	
No.	A576#1
Ends	153
FFC / DFC / RFC	

	GPS	INU
Lat	36°58·36N	36°58·36N
Long	025°09·46W	25°09·47
Time	0924	0925
Status	Ss	GC ALIGN

DRS recording to HORACE (y) n

HORACE recording to disc (y) n

SATCOM sending pos. reports (y) n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr		Wind/ Sea st.
0825				DATA	ON					
115430				SET	INU	TO NAV				
121650				T/O	START	MANUAL				
				START	RUN	1				
122526	10	FL80		220	230	11·7	1·0			
123109	11		START	VIDEO		A576#1	COUNT=	0000		
124139	12		SWITCH	TO	DFC					
124329	13	FL80		240	END	RUN 1				
124428	14		SWITCH	TO	FFC					
125031	15	50'	1016	230	START	P1 ↗				SS=4
125210	16	1000'		235	INTERRUPT	P1				
125418	17	1000'		250	RESTART	P1				
130034	18	8000'		245	INTERRUPT	P1				
130200	19	5000'		240	RESTART	P1				
130715	20	FL400		190	INTERRUPT	P1				
130937	21	FL400		195	RESTART	P1				
131704	22	FL450		195	INTERRUPT	P1				
131851	23	FL150		195	RESTART	P1				
132836	24	FL200		195	END	P1		NOXY	ZERO	
133010	25	FL200		200	START	P2 ↘				
133629	26	FL130		195	INTERRUPT	P2				
133945	27	FL130			RESTART	P2				
135232	28	50'	1017	220	END	P2 / START	P3			SS=4/5
140107	29	FL050		215	INTERRUPT		P3			

Met Research Flight

Video Tape	
No.	AS76#1
Ends	1531
FFC / DFC / RFC	

	GPS	INU
Lat	30 09.60N	30 07.31N
Long	25 00.56W	25 00.13W
Time	1426	1426
Status	SS	NAV

DRS recording to HORACE	(y) / n
HORACE recording to disc	(y) / n
SATCOM sending pos reports	(y) / n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr		Wind/ Sea st.
140319	30	FL50		215	RESTART		P3			
140824	31	FL100		220	INTERRUPT		P3			
141113	32	FL100		215	RESTART		P3			
141756	33	FL150		215	INTERRUPT		P3			
141926	34	FL150		210	RESTART		P3			
142804	35	FL200		200	END P3					
142925	36	FL200		200	START P4					
144100	37	FL90		205	INTERRUPT		P4			
144448	38	FL90		205	RESTART		P4			
145759	39	50'	1020	210	END P4	/ START	P5			SS=4
150008	40	1000'		210	INTERRUPT		P5			
150150	42	1000'		210	RESTART		P5			
152344	44	FL170		210	INTERRUPT		P5			
152644	45	FL170		210	RESTART		P5			
153124	47	FL200		210	END P5		— BOTTLE FILL			
153153	48		SOUR VIDEO		AS76 #1		COUNT = 6134			
153238	49		START VIDEO		AS76 #2		COUNT = 0000			
153518	50	FL200		210	START		P6 ↓			
154050	51	FL150		210	INTERRUPT		P6			
154240	52	FL150		210	RESTART		P6			
154813	53	FL100		210	INTERRUPT		P6			
154908	54	FL100		210	RESTART		P6			
155320	55	FL060		210	INTERRUPT		P6			
155629	56	FL060		205	RESTART		P6			
155944	57	[illegible]		210	INTERRUPT		P6			
160015	58	3000'		210	RESTART		P6			
160356	59	1000'		210	INTERRUPT		P6			
160428	60	1000'		210	RESTART		P6			
160542	62	500'		210	INTERRUPT		P6			
160715	63	500'		210	RESTART		P6			
160921	64	50'		210	END P6	/ START	P7			SS=3
[illegible]	[illegible]	100'	1020	210	INTERRUPT	P7	/ START	RUN 2		
161202	67				[illegible]					

Met Research Flight

Flight Leader's In-Flight Log

Flight No A 576 Date 16/9/97 Page 2 of 2

Video Tape	
No.	A576#2
Ends	1832
FFC / DFC / RFC	

	GPS	INU
Lat	25 26·03N	25 27·28N
Long	25 50·86W	25 50·30W
Time	1638	1639
Status	Ss	NAV

DRS recording to HORACE (y) / n

HORACE recording to disc (y) / n

SATCOM sending pos. reports (y) / n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr		Wind/ Sea st.
				025						
160628	68	100'		RESTART		P7 / END	NON	2		
[illegible]	[illegible]	2000'		030		INTERRUPT	P7			
162155		1500				[illegible]	GOTO		1500'	
162603	70	1500		030		RESTART	P7			
163031	71	4000'		030		INTERRUPT	P7			
163322	72	4000		030		RESTART	P7			080
163615	74	FL080		030		INTERRUPT	P7			
163917	75	FL080		030		RESTART	P7			
164129	76	FL070		030		INTERRUPT	P7			
164528	77	FL070		030		RESTART	P7			
165051	78	FL070		030		INTERRUPT	P7			
165251		FL070		030		RESTART	P7			
165516	80	FL090		030		INTERRUPT	P7			
170116	81	FL090		030		RESTART	P7			
170417	82	FL060		025		[illegible]	END P7 / START	P8	↓	
171814	83	FL050		025		END P8 / START	P9	↑		
172827	84	FL050		020		END P9 — ZERO		NON		
173114	85	FL050		020		START P10		↓		
174211	86	FL050		020		END P10 / START	P11	↑		
175252	87	FL050		020		END P11 / START	P12	↘		
180440	88	FL050				END P12 / [illegible]				
180727	89	FL050		015		START P13		↑		
181807	90	FL050		015		END P13 / START	P14	↓		
182818	91	FL050		015		END P14	(ZERO)			
183040	92	FL050		020		START P15				
183407	93	END	TAPE	A576#2		COUNT =	60244			
183205	94	START	TAPE	A576#3		COUNT = 0000				
184102	95	FL050				END P15				
						CALIBRATIONS	FOR	NOX		

Met Research Flight

FL 50 FL50 46 36 59·8 N 025 10·6W

Video Tape
No.
Ends
FFC / DFC / RFC

	GPS	INU
Lat		
Long		
Time		
Status		

DRS recording to HORACE	y / n
HORACE recording to disc	y / n
SATCOM sending pos reports	y / n

GMT	EVM	Height	QNH	Hdg	IAS	TAT	DP	DI Htr		Wind/ Sea st.
192506	96			STOP	VIDEO CAMS =			2555		
193319				LAND	SAMTA	LUNA				
193712				DATA	OFF			GPS	POS	
								36 58.40N		
								25 09.93W		

VIDEO TAPE LOG

Flight No A 576

Project ACSOE Date 16/9/97

Tape No A576#1 User H. RICHER Retention Period INDEF

GMT	Tape Counter	Camera Position	Remarks
123109	0000	FFC	START VIDEO
153153	6134	FFC	END TAPE

Met Research Flight

SEE SUMMARY FOR RUN INFORMATION

VIDEO TAPE LOG

Flight No A 576

Project ACSOE

Date 16/9/97

Tape No A576 #2 User H. RICHER

Retention Period INDEF

GMT	Tape Counter	Camera Position	Remarks
153238	0000	FFC	START VIDEO (NEW TAPE)
183107	6044	FFC	END TAPE

Met Research Flight

VIDEO TAPE LOG

Flight No A 576

Project ACSOE

Date 16/9/97

Tape No A576#3 User H. RICHER

Retention Period INDEF

GMT	Tape Counter	Camera Position	Remarks
183205	0000	FFC	START TAPE (NEW TAPE)
192506	2555	FFC	END SCIENCE.

Met Research Flight

SAMPLE BOTTLE RECORD

Flight No. A 576 Date 16/9/97 Sheet no. 1

Sample no.	Bottle no.	Time	E/M	Height	PRESSURE PURGE TIME	PRESSURE FILL TIME	PRESSURE END TIME	True pressure (mb)	Remarks (RUN NO. etc)
1	P3 B6			FL 200	153000	153125	153505	465	~~purge at run start~~ fill at run start P6 5.5 bar. 200
2	P3 P7			FL 150	153600	154052	154235	574	fill at run start 6.4 bar 150
3	P3 B11			FL 100	154530	154816	154905	694	fill at run start 100
4	P3 B12			FL 060	155016	155550	155625	816	purge filled at zeros on run * 060
5	P3 B2			3000'	155800	155944	160012		3000
6	Z1			1000'	160130	160400	160426	987	1000
7	P3 B5			500'	160520	160645	160711	1006	flush extend into run 1 min. 500
8	Z02			100'	160830	161503	161528	1018	extended flush P7 * 100
9	B9			2000'	161600	162025	162053		(some cloud) 2000
10	R42			1500'	162320	162530	162558	969	extra. 1500'
11	R20			~~4000'~~	~~162700~~	~~163040~~	163118	881	4000
12	H4			4000	080. 163214	163615	163658	153	080
13	Z05			120	163800	164422	164528	646	* 120

SAMPLE BOTTLE RECORD

Flight No. A576 Date 16/9/97 Sheet no 2/2

Sample no.	Bottle no.	Time	E/M	Height	PRESSURE PURGE TIME	PRESSURE FILL TIME	PRESSURE END TIME	True pressure (mb)	Remarks (RUN NO. etc).
14	Z 04			FL 170	164700	165053	165307	528	6.5 [illegible] 170
15	Z 03			FL 190	165506	165846	170115	487	flush 1 min *190 onto run. 5.8 bar [illegible]

PAN GC Log

(1)

GC Sample record			Flight Number: D576					Operator: Jo							Date: 16/9/97	
Sample No.	Time	Height	Channel 1					Channel 2					Channel 3				Comments
			Optimisation = 14					Optimisation = 11					Optimisation = 13.				
			Back Flush = 37.					Back Flush = 42.5.					Back Flush = 37.6.				
			Flow rate = 36					Flow rate = 36.1					Flow rate = 36.6				
			ST	SP	DT	DP	BT	ST	SP	DT	DP		ST	SP	DT	DP	
#1	114658	Ground															
#2	115414	Ground	1446	1557				477	1861				2449	1784			
#3	122915	FL080	453	1261				483	1527				456	1418			Run 1 P1
#4	123434	FL080	455	1268				484	1526				457	1427			Run 1. P1
#5	~~130446~~	1000	455	1535				487	1832				458	1750			Run 2. P1
#6	130746	A100	455	1253				487	1527				458	1439.			P1
#7	131754	FL150	457	1167				489	1445				459.	1363			Run 1
#8	140838	FL100	451	1246				487	1502				456	1426			P2.
#9	141416	FL130	451	1175.				486	1365				455	1353			P3
#10	142646	FL200	451	1079				486	1271				454	1235.			P3 top.
#11	144050	FL040	450	1275				484	1527				451	1466			P4.
#12	150004	10001	443	1545				479	1956				446	1730			P5.
#13	FL140	152028	441	1165				478	1441				446	1358			

PAN GC Log

GC Sample record			Flight Number: AS76					Operator: Joss.					Date: 6/9/97			
Sample No.	Time	Height	Channel 1					Channel 2					Channel 3				Comments
			Optimisation = 14					Optimisation = 4					Optimisation = 13				
			Back Flush = 37					Back Flush = 42.5					Back Flush = 37.6				
			Flow rate = 36					Flow rate = 36.1					Flow rate = 36.6				
			ST	SP	DT	DP	BT	ST	SP	DT	DP		ST	SP	DT	DP	
#14	152547	FL170	442	1100				478	1335				447	1281			
#15	153146	FL200	442	1024				479	1206				448	1186			
#16	154604	FL150	443	1139				479	1341				448	1323			P6.
#17	154815	FL160	443	1260				479	1496				448	1457			
#18	155348	FL060	443	1384				479	1657				446	1596			
#19	160007	BOOO'	443	1486				479	1783				448	1716			
#20	160535	500'	442	1578				479	1909				448	1816			
#21	160752	FL120	460	1151				493	1502				466	1411			

DATE 16 9 97			MRF TI	01			NAVIGATOR		Flt Lt 'SIMMO' Simpson	
									VOR 1 SMA TAC 1 NL	
AIRFIELD		TENERIFE SF		MAY					VOR 2 ✓ TAC 2 ✓	
ATIS ' '		R/W	18	°C	+23/21	QNH	1012	2985	ADF SMA 323	
1150 z		W/V	270	08		QFE				
		Wx				RPS			Rte Salt 3100	
		Cloud				LFP	1012		MSFL 3500'	
ATC:	FP.	✓ 220				SSR:	2000		INS NAV ✓	1154
A/B	1217	S/H	1218	F/T	8.00					
				ETA	2018					

Time	HDG	DR	G/S	IAS	TAS	W/V	ALT	QNH	LAT/LONG	RUN
122825	230	6P	200	180	220	270 31	FL80	1013	N 36299 W025 34.0	R1
124329	287	4P	283	180	294	280 25	✓	—	35354 02625.6	E ✓
125030	228	1P	176	✓	190	270 15	50'	1016	35142 026477	P1
125220							1000'	—	3510.0 02651.9	INS
125416							↗	—	35055 02656.6	P1
130035	290	1S	180	—	202	280 18	5000	—	34565 027160	INT
130206	-	-	-	-	-	-	-		34576 027215	P1
130715							100	1013		INT
131036	190	4P	219	180	215	280 22	↗	—	34356 02732.3	P1
131705	195	—	230	—	230	285 21	150	—	3411.5 02730.6	INT
131850	-								34043 027384	P1
132836	197	3P	259	-	250	315 20	200	-	33245 02736.0	EP1
133010	-						↳ 130	-	33177 02730.3	P2
133630	191	-	226	-	228	270 17	130	-	32504 02730.2	INT
133945							↘ 50'	-	32389 027298	P2
135233	227	4P	176	-	185	270 15	50'	1018	81572 02722.6	EP2/P
140107	213	6P	193	-	206	265 29	FL50	1013	31331 02734.3	INT
140319							↗		31263 02736.6	AP3
140824	-					245 33	FL100	-	3110.6 02741.0	INT
141113	-						↗		31018 027439	P3
141756	216	4P	222	175	234	275 19	150		3039.5 02750.9	INT
141926							↗ 200		30240 027528	
142604	200	0	251	—	250	295 10	FL200	-	3000.7 02801.8	EP3
142925	-								-	P4
144100	203	2P	209	180	215	260 18	FL90	✓	29098 28049	INT
145800	208	2P					50'	1020	2815.2 028146	EP4
150250	-	-	182	-	187	260 13	↗	-	27809 028182	P5
152305	208	3P	232	-	240	295 13	170		2651.1 028363	INT
163124	"	4P	231	-	252	280 18	FL200	1013	2620.9 028443	EP5
153516	-	-	252				200 ↘ 50		2600.7-2847.9	P6
154813	209	2P	226	-	220	310 09	FL100	-	25137 028579.1	INT
155406							↓ 60	-	25103 028598	P6
155320	-	-	-	-	-	195 04	60	-	2456.0 02903.5	INT

ATIS ' '	R/W		°C		QNH		LND		
z	W/V				QFE		A/B		
Wx							Time		
Cloud									C/FWD

B/FWD										
TIME Z	HDG	DR	G/S	IAS	TAS	W/V	ALT	QNH	LAT/LONG	RUN
155624	206	18	198	186	202	163.03	4300	1013	N 24456 W 02906.0	P6
155941							3000	-		INT
160366							1000	1020		
160426							4500			P6
160542							500		2417.2 02916.3	INT
160821							50'	1020	2409.0 02918.1	
161202	021	2P	178	-	189	090 13	100	1020	2402.8 02917.9	R2
161629	029	35	182	-	192	085 11	2000	-	2416.2 02916.4	P7
162603	-					077 10	440		2445.3 02908.9	P17
163031	027	2P	202	-	-	130 13	40	-	2459.4 02904.7	INT
163618	028	2P	203	-	-	080 08	FL80	-	2518.6 02858.9	-
163717									02522.1 02858.0	P7
165051	023	25	223	-	248	340-09	170	1013	02611.3 02540.5	INT
165251								-	02620.8 02842.4	
165516	-	-	-	-	218	275 09	190		02625.9 02841.0	INT
170116	-	-		-	-	270 13	200	1013	02604.9 02835.4	P7
170217									02700.1 02833.0	P8
171814	021	35	277	-	270	250/13	FL50	-	2812.6 02817.6	P9
172827	020	-	243	-	-	295 03	FL150	-	2855.7 02807.8	EP9
173144	-	18	303	-	310	275 06	50	-	2910.7 02804.3	P10
174211	021	-	-	-	-	270 13	150		3003.1 02752.0	P11
175252	-	-					150		3049.4 02743.8	P12
180440	-	25	298	-	280	300 14	50	-	3150.1 02732.5	EP12
180727	014	25	271	210	275	285 10	150	-	3202.8 02731.9	P13.
181807			240			310/12	150	-	3248.6 02725.7.	P14
182818	015	45	292	-	-	280 20	FL50	-	3340.0 02817	EP14
183040						290 14	150		3351.4 02716.9	P15
184102	020	-	250	200	280	- -	150		3436.1 02704.5	E-
184400.										RD
1912.00	040	45	226	180	225	290 15	600	1013	36188 02536.5	END
									9500 1012	
									1.	

ATIS 1900	R/W	18	°C	23/22	QNH	1012	LND	1924	1935	
z	W/V	2709			QFE		A/B	1217	1215 7:20.	
Wx	9km	~~2000~~ 1200		TC	1400		Time			
Cloud	Shwr									

FLIGHT LEADER'S INSTRUMENT STATUS REPORT

FLIGHT NO: A576 DATE: 16/9/97 MRF 1

INSTRUMENT	FITTED	OPERATED	COMMENTS
NAVIGATION:			
GPS	✓	✓	
OMEGA	✓	✓	
INU	✓	✓	
RADALT	✓	✓	
THERMOMETERS:			
DI TEMP	✓	✓	
NDI TEMP	✓	✓	
ICTP	✓	✓	
HEIMANN	✓	✓	
HYGROMETERS:			
GEN. EASTERN	✓	✓	
TWC	✓	✓	
FWVS	✓	✓	
J/W	✓	✓	
EXP. PITOT HEAD:			
STATIC PRESS.	✓	✓	
PITOT PRESS.	✓	✓	
GUST VANES	✓	✓	
RADIOMETERS:			
UPPER CLEAR	SOLO ✓	✓	
UPPER RED	✓	✓	
UPPER SILICON	SNOR ✓	✓	
LOWER CLEAR	SOLO ✓	✓	
LOWER RED	✓	✓	
LOWER SILICON	SNOR ✓	✓	
MARSS	X		
SAFIRE	X		
DEIMOS	X		
ARIES	✓		
CHEMISTRY:			
OZONE	✓	✓	
ECGC	✓	✓	
NOX	✓	✓	
OTHERS:			
CCN	X		
CLOUD PHYSICS	X		
CABIN PRESS	✓	✓	
NEPHELOMETER	X		
PSAP	✓	✓	

P.T.O. FAULTS/INCIDENTS

A576 16-SEP-97 Data starts 08:07:35 Data ends 19:37:09

Header file EAGLE$DUA0:[RAWDATA]A576_RAW_HDDR.DAT;
Data file EAGLE$DUA0:[RAWDATA]A576_RAW_DATA.DAT; 80.8 Mbytes (165480 blocks
)

Transcription on 25-SEP-97 09:12:02
Extraction on 25-SEP-97 09:12:02

Data set type 2

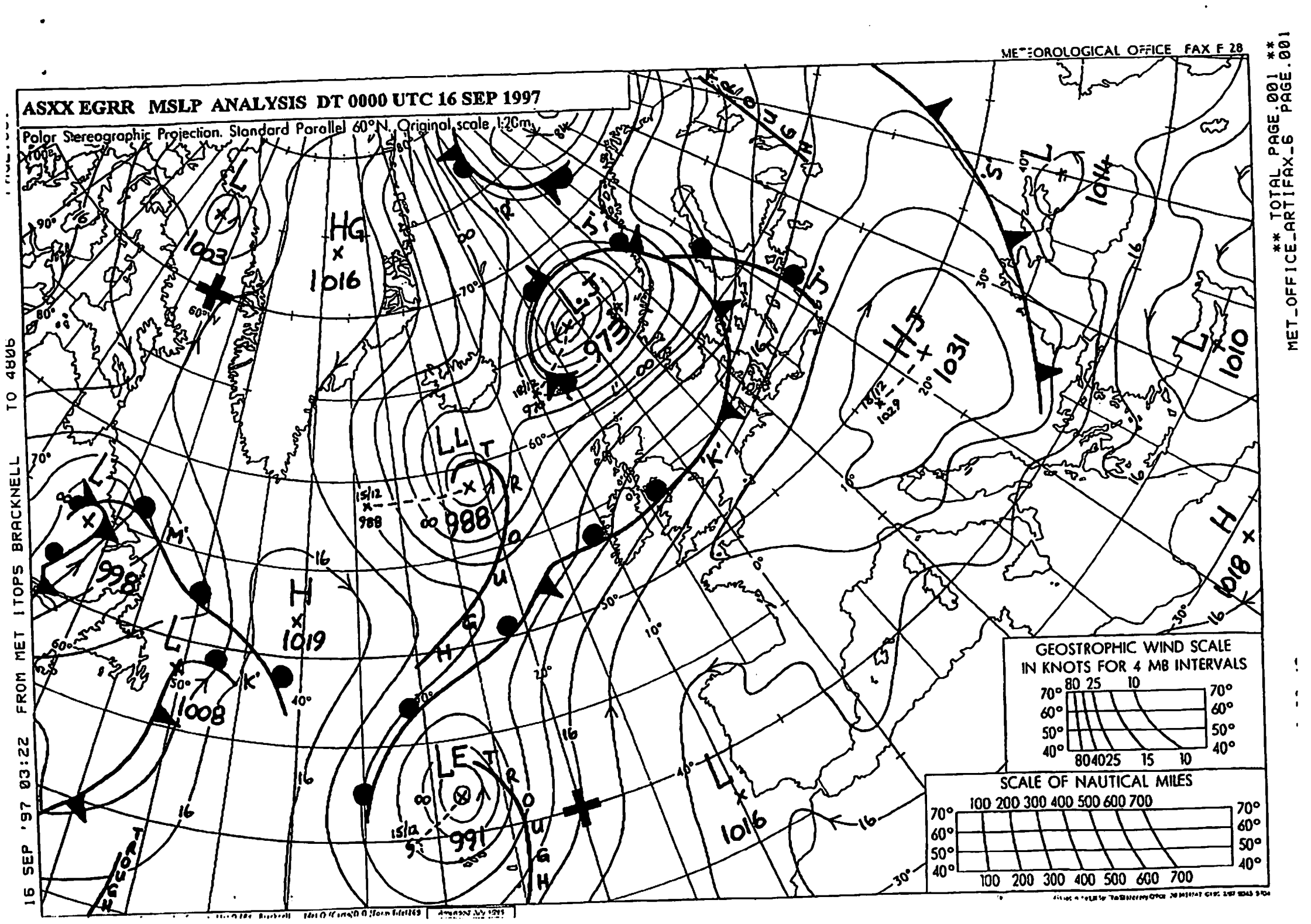
ISS 31 DBF 31 IC 02 121 parameters recorded 889 samples per second

3 sections of data

Section	Starts					Ends				
	GMT	SEC	EVM	BLK	REC	GMT	SEC	EVM	BLK	REC
1	08:07:35	029255	000	00010	00001	14:19:55	051595	034	22350	22341
2	14:19:58	051598	034	22353	22342	14:57:55	053875	038	24630	24619
3	14:57:59	053879	039	24634	24620	19:37:09	070629	096	41384	41370

LIST OF FORMS USED ON FLIGHT

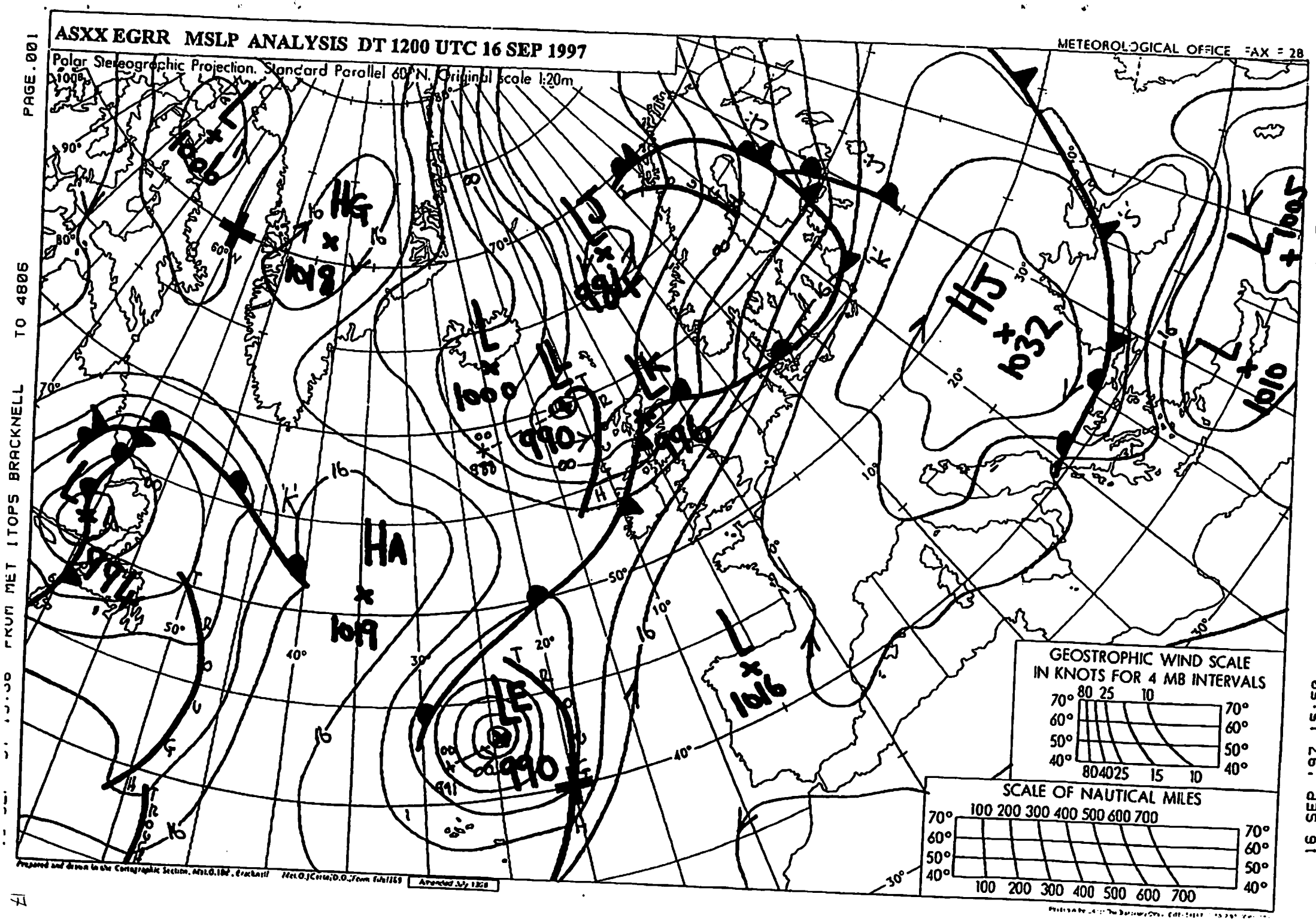
No. of forms	Form Title
✓ ✓ ✓	Aircraft Scientist de-briefing sheet Aircraft Scientist log Aircraft Scientist post flight requirements sheet Interactive log
✓ ✓ ✓ ✓	Flight Leader pre-flight check form Flight Leader in-flight check form Flight Leader in-flight log Flight Leader Video tape log (photocopy original)
	~~SAFIRE log~~ ~~CCN log~~ ~~MARSS log~~ ~~DEIMOS log~~ Chemistry log BOTTLES, ETC. ✓ ✓
	~~Particulate / Filter boom Operator's log~~ ~~2DC / FSSP / Holography Operator's log~~ ~~Sonde Ejector's log~~ Navigator's log Photographic log (photocopy original)
✓ ✓ ✓ ✓	Instrument status forms RTD prints Raw data plots Weather charts Satellite pictures GPS track


METEOROLOGICAL OFFICE FAX F 28
ASXX EGRR MSLP ANALYSIS DT 0000 UTC 16 SEP 1997
Polar Stereographic Projection. Standard Parallel 60°N. Original scale 1:20m
HG 1016
1003
973
LL 988
991
1008
1019
998
1031
1029
1014
1010
1016
1018
GEOSTROPHIC WIND SCALE
IN KNOTS FOR 4 MB INTERVALS
80 25 10
80 40 25 15 10
SCALE OF NAUTICAL MILES
100 200 300 400 500 600 700
16 SEP '97 03:22 FROM MET ITOPS BRACKNELL TO 4806
** TOTAL PAGE.001 **
MET_OFFICE_ARTIFAX_6 PAGE.001

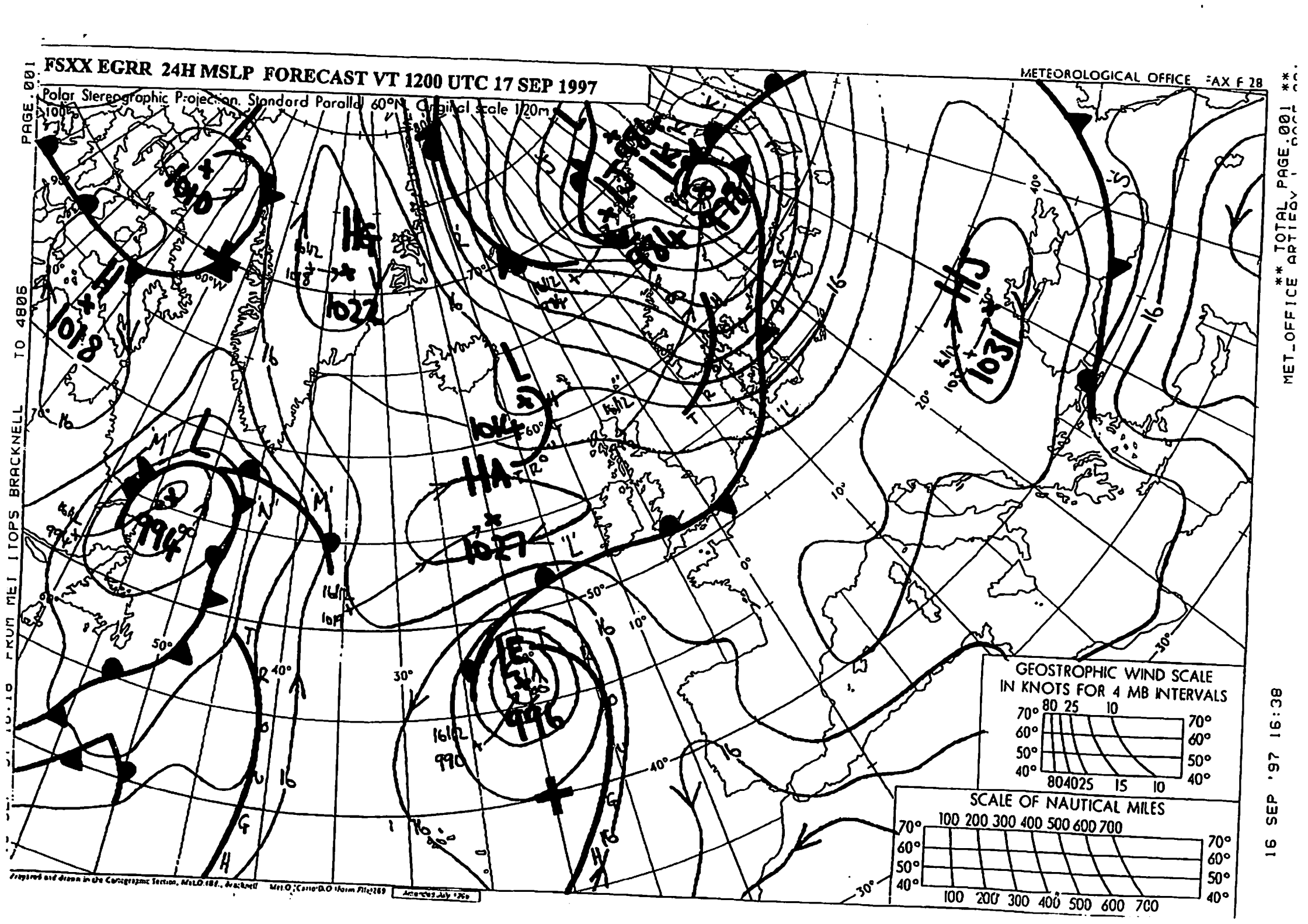
METEOROLOGICAL OFFICE FAX = 28

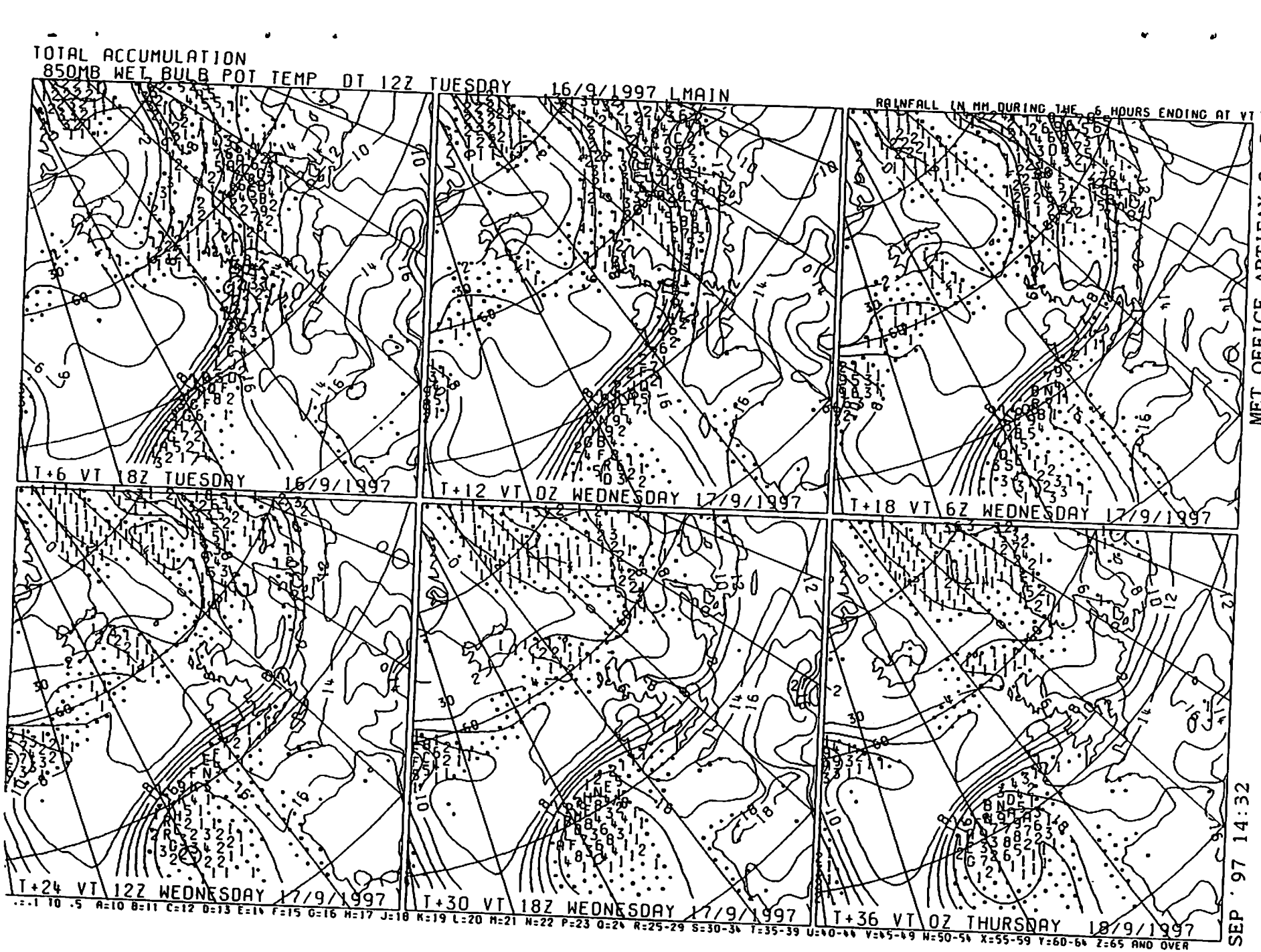
ASXX EGRR MSLP ANALYSIS DT 1200 UTC 16 SEP 1997

Polar Stereographic Projection. Standard Parallel 60°N. Original scale 1:20m



Prepared and drawn in the Cartographic Section, Met.O.1B, Exeter. Met.O.Cons/D.O./Form 5161/89 Amended July 1989


FSXX EGRR 24H MSLP FORECAST VT 1200 UTC 17 SEP 1997
Polar Stereographic Projection. Standard Parallel 60°N. Original scale 1:20m
METEOROLOGICAL OFFICE FAX F 28
PAGE.001
TO 4806
FROM MET_OFFICE BRACKNELL
** TOTAL PAGE.001 **
16 SEP '97 16:38
GEOSTROPHIC WIND SCALE
IN KNOTS FOR 4 MB INTERVALS
80 25 10
804025 15 10
SCALE OF NAUTICAL MILES
100 200 300 400 500 600 700
100 200 300 400 500 600 700



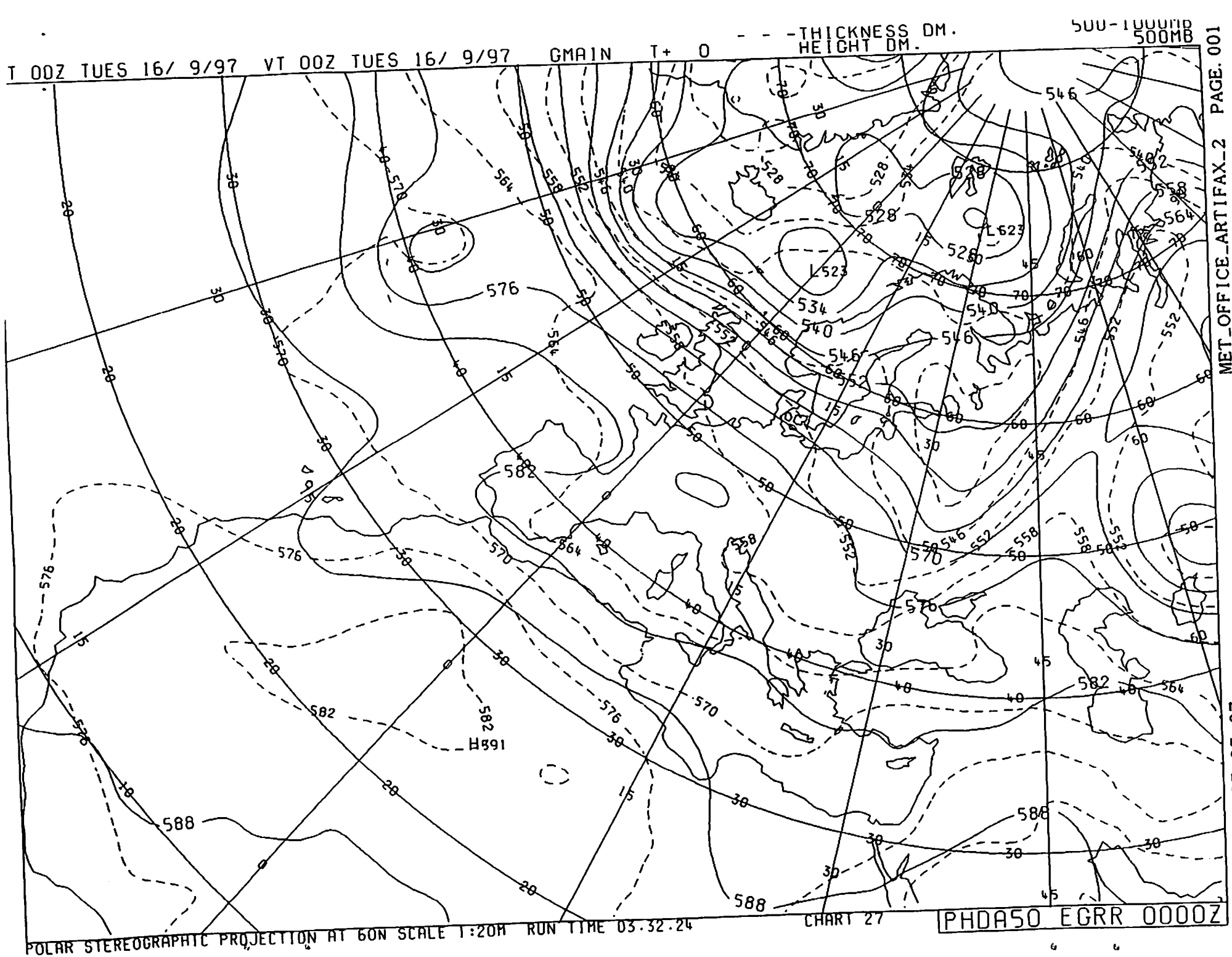
16 SEP '97 14:32

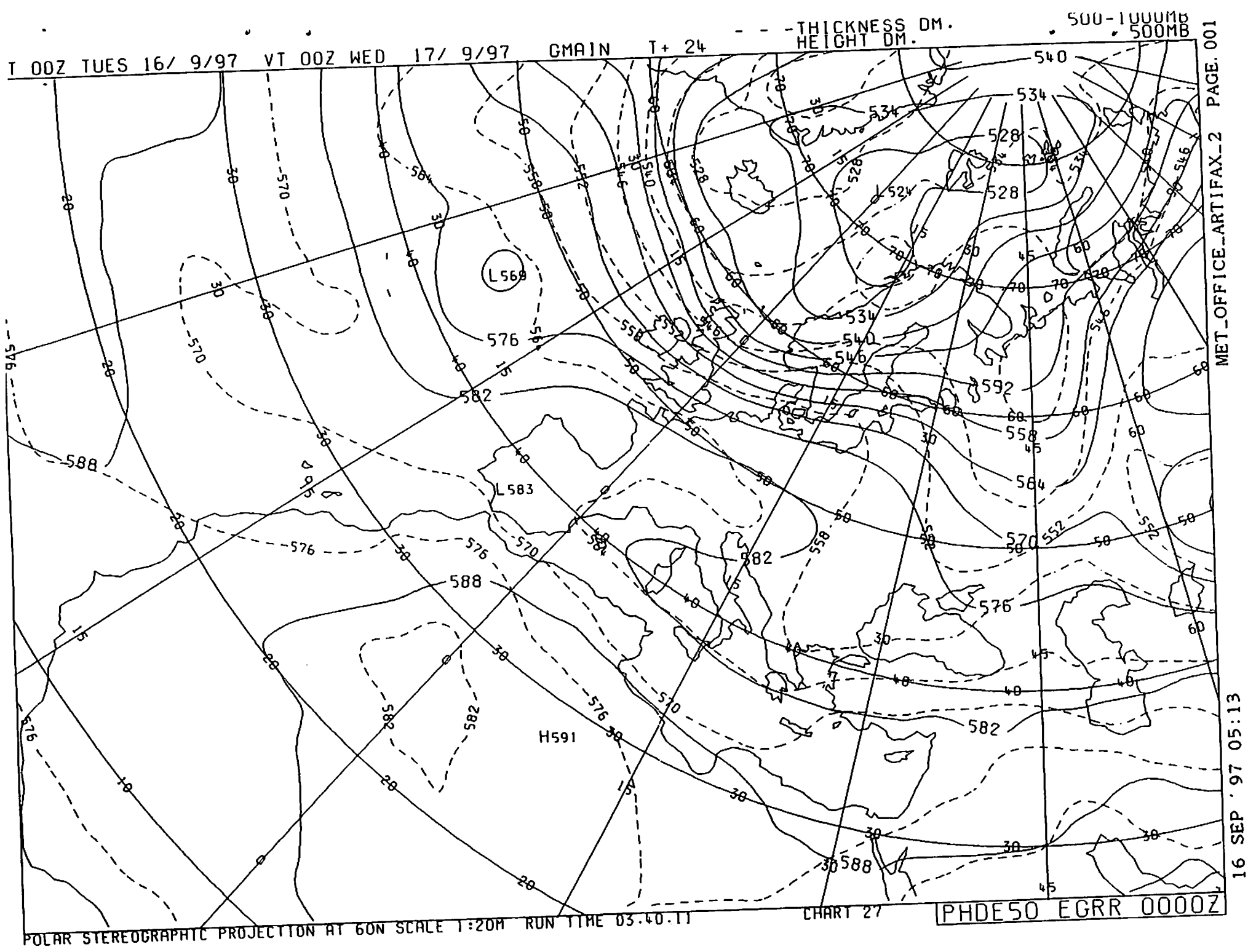
SNOW PROBABILITY AT MSL
TOTAL PPN RATE
PRESSURE AT MSL
.03 .1 .5 1.0 MM/HR AT VT
SNOW
CONVECTIVE
DYNAMIC
00 12Z TUESDAY 16/9/1997 LMAIN
T+6 VT 18Z TUESDAY 16/9/1997
T+12 VT 00Z WEDNESDAY 17/9/1997
T+18 VT 06Z WEDNESDAY 17/9/1997
T+24 VT 12Z WEDNESDAY 17/9/1997
T+30 VT 18Z WEDNESDAY 17/9/1997
T+36 VT 00Z THURSDAY 18/9/1997

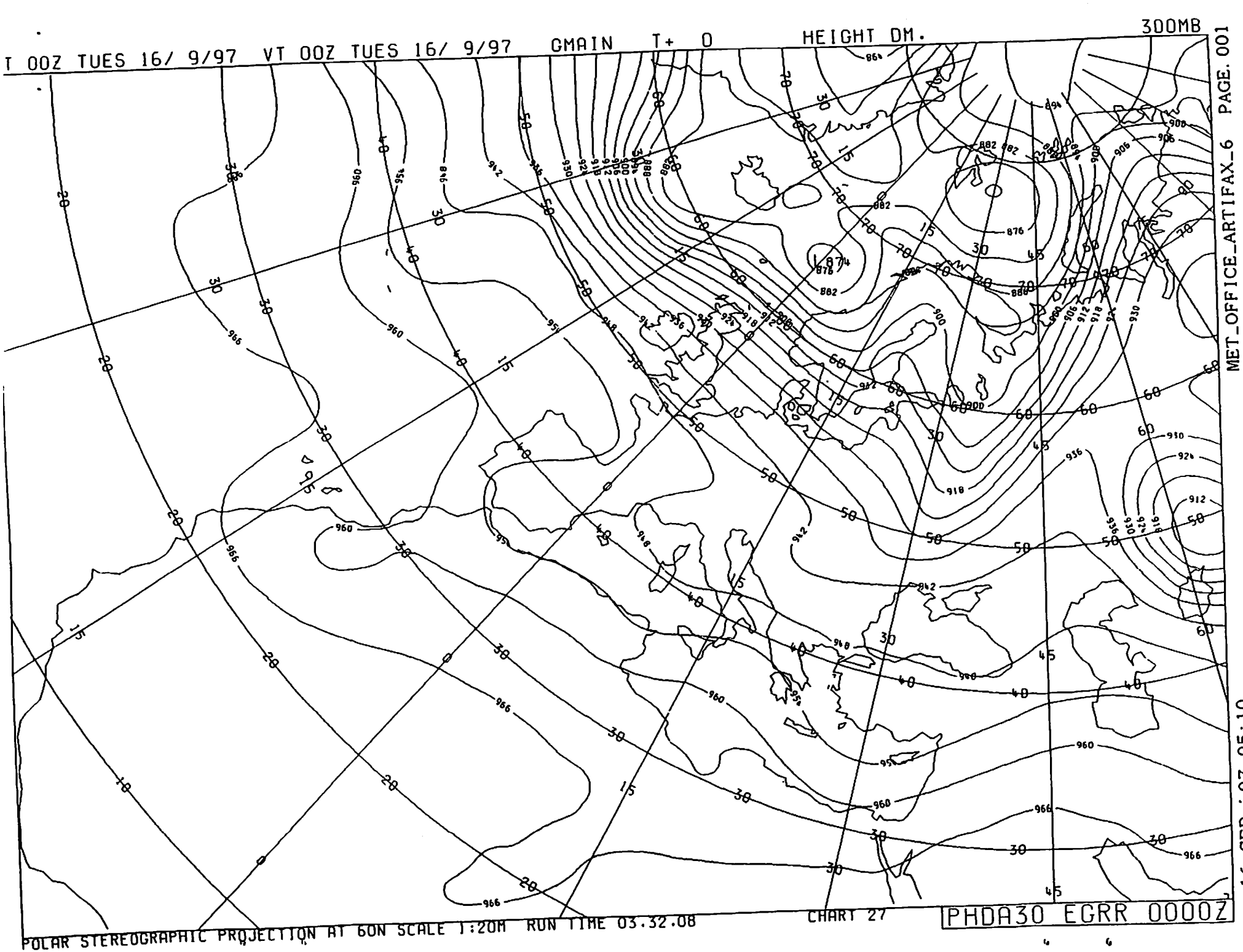
SNOW PROBABILITY AT MSL
TOTAL PPN RATE
PRESSURE AT MSL
DT 00Z TUESDAY 16/9/1997 LMAIN
SNOW
CONVECTIVE
DYNAMIC
.03 .1 .5 1.0 MM/HR AT VT
T+24 VT 00Z WEDNESDAY 17/9/1997

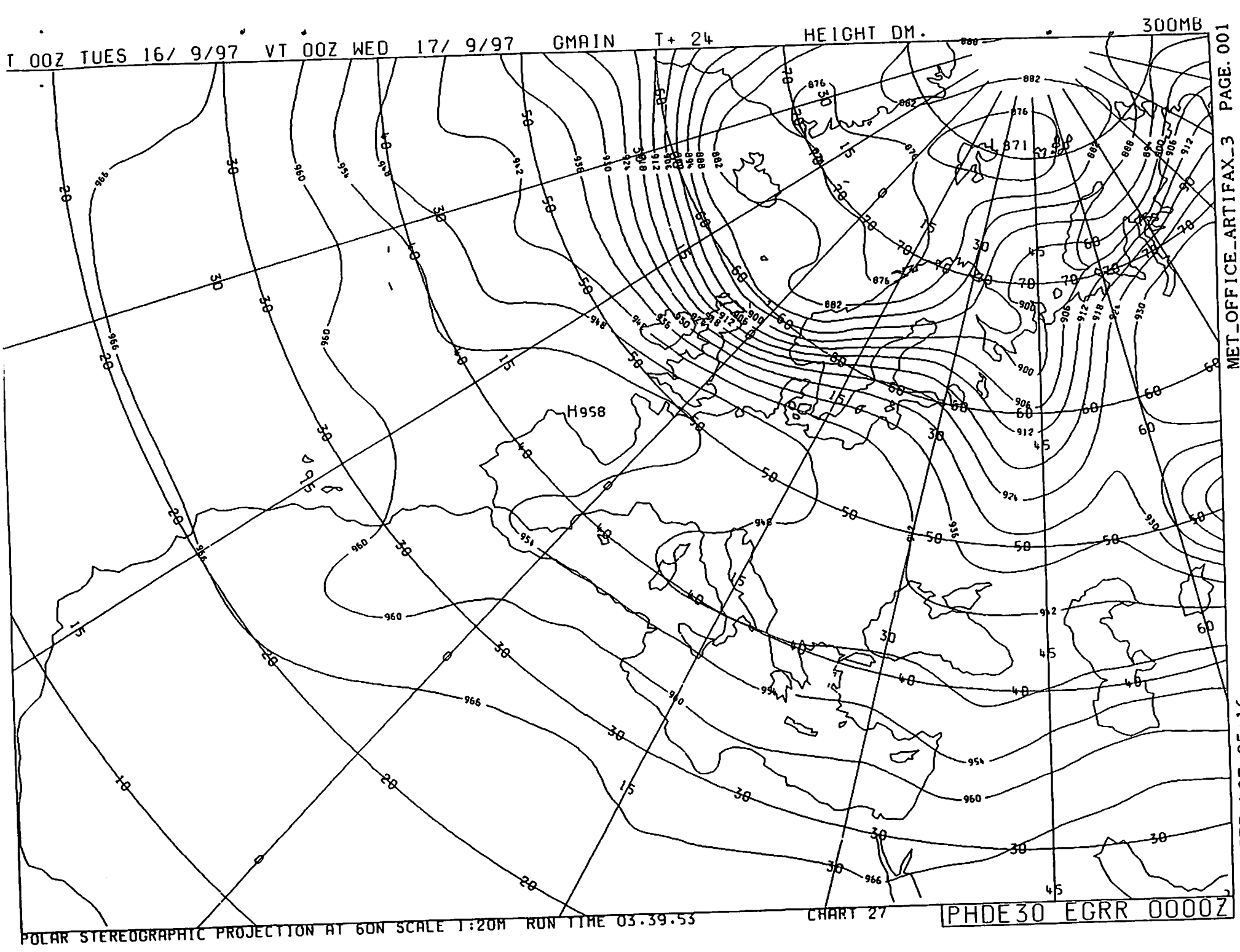
SNOW PROBABILITY AT MSL
TOTAL PPN RATE
PRESSURE AT MSL
.03 .1 .5 1.0 MM/HR AT VT
SNOW
CONVECTIVE
DYNAMIC
00 OOZ TUESDAY 16/9/1997 LMAIN
T+12 VT 12Z TUESDAY 16/9/1997

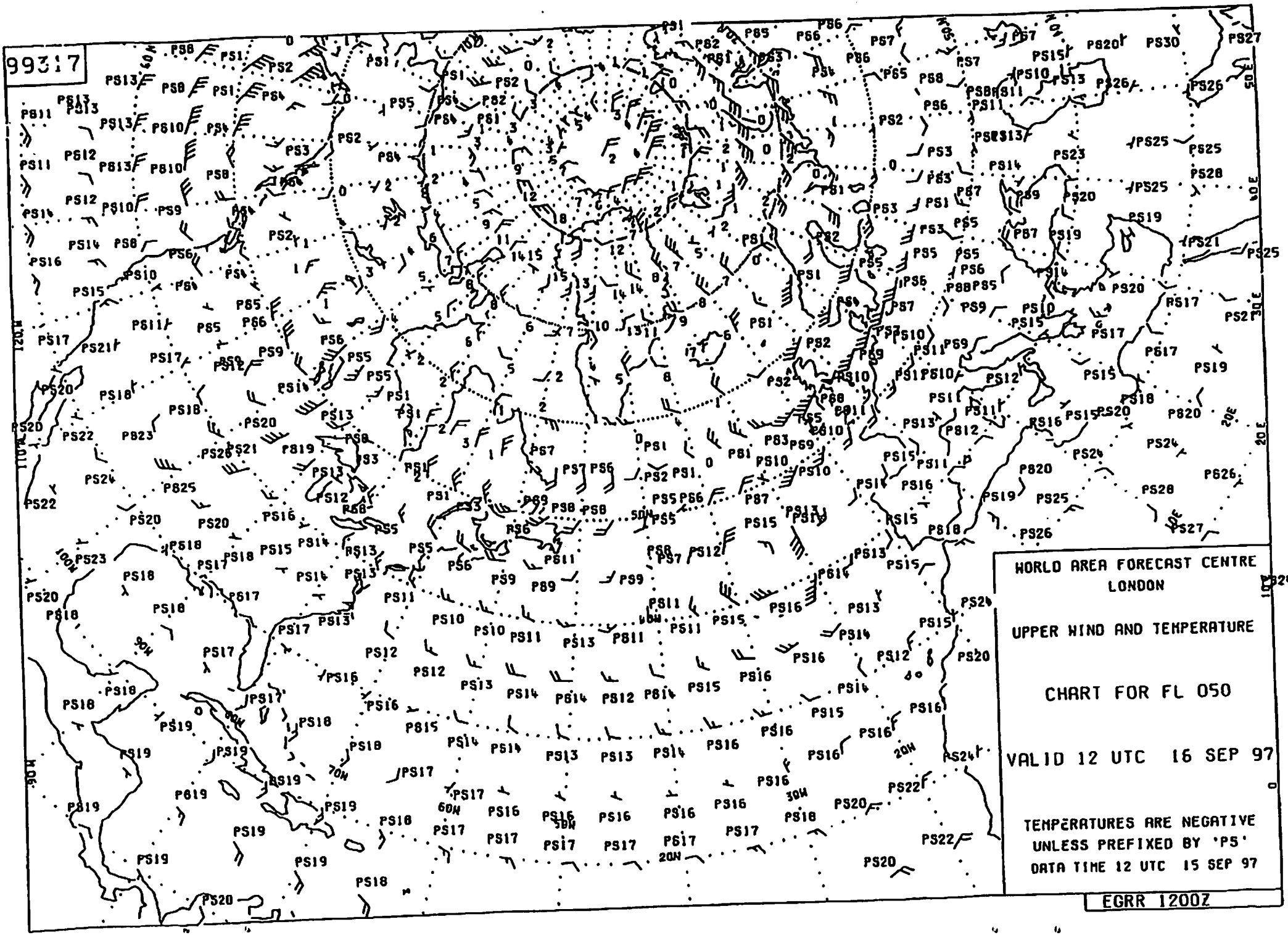
NOW PROBABILITY AT MSL
OTAL PPN RATE
RESSURE AT MSL
OT 00Z TUESDAY 16/9/1997 LMAIN
SNOW
CONVECTIVE
DYNAMIC
.03 .1 .5 1.0 MM/HR AT VT
T+0 VT 0Z TUESDAY 16/9/1997
16 SEP 97 03:31
MET_OFFICE_ARTIFAX_2
PAGE. 001

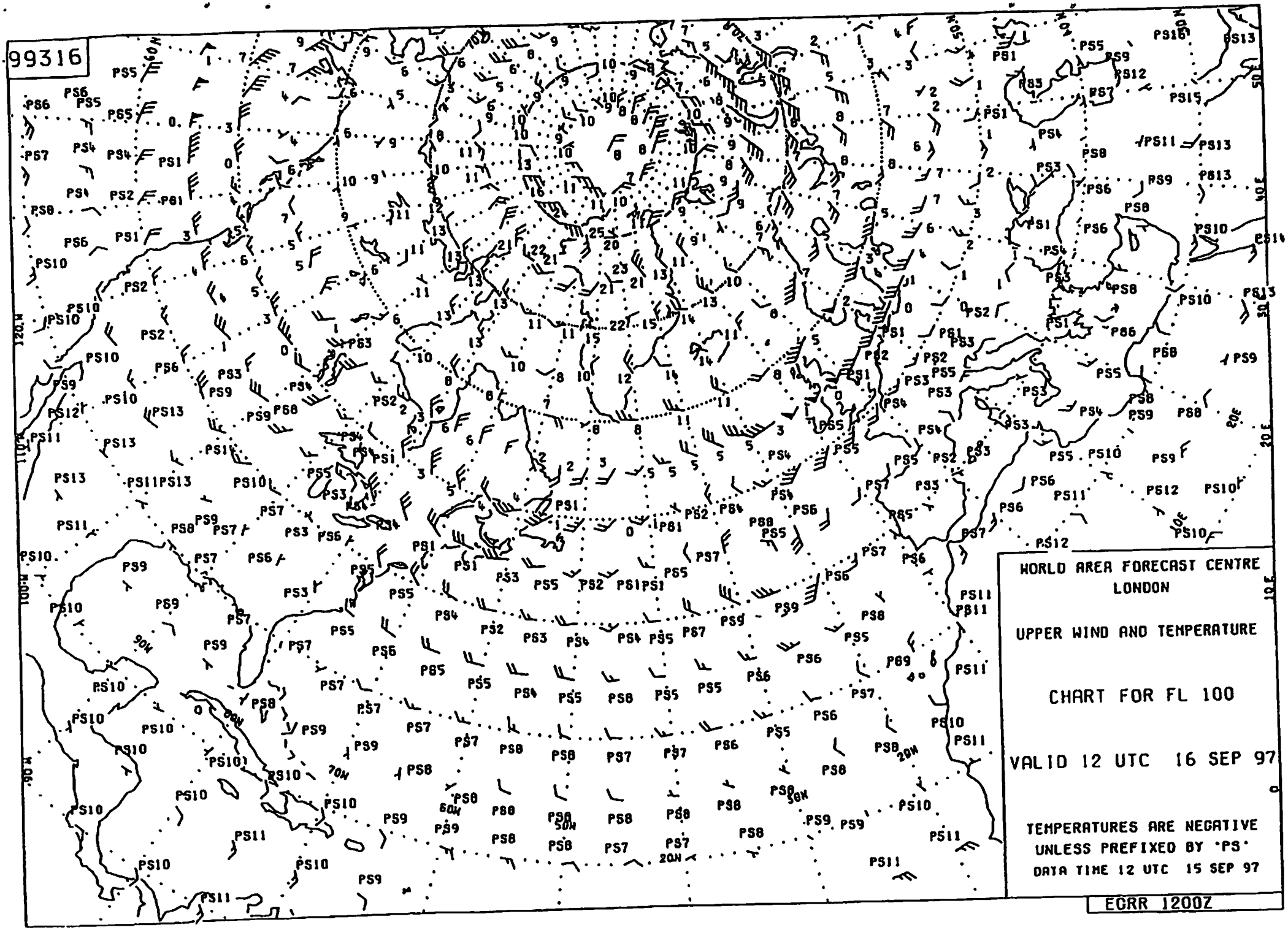

T OOZ TUES 16/ 9/97 VT OOZ TUES 16/ 9/97 GMAIN T+ 0
- - -THICKNESS DM.
HEIGHT DM.
500-1000MB
500MB
MET_OFFICE_ARTIFAX_2 PAGE. 001
16 SEP 97 05:07
L623
L523
H591
546
528
534
540
552
564
576
582
588
570
558
PHDA50 EGRR 0000Z
CHART 27
POLAR STEREOGRAPHIC PROJECTION AT 60N SCALE 1:20M RUN TIME 03.32.24

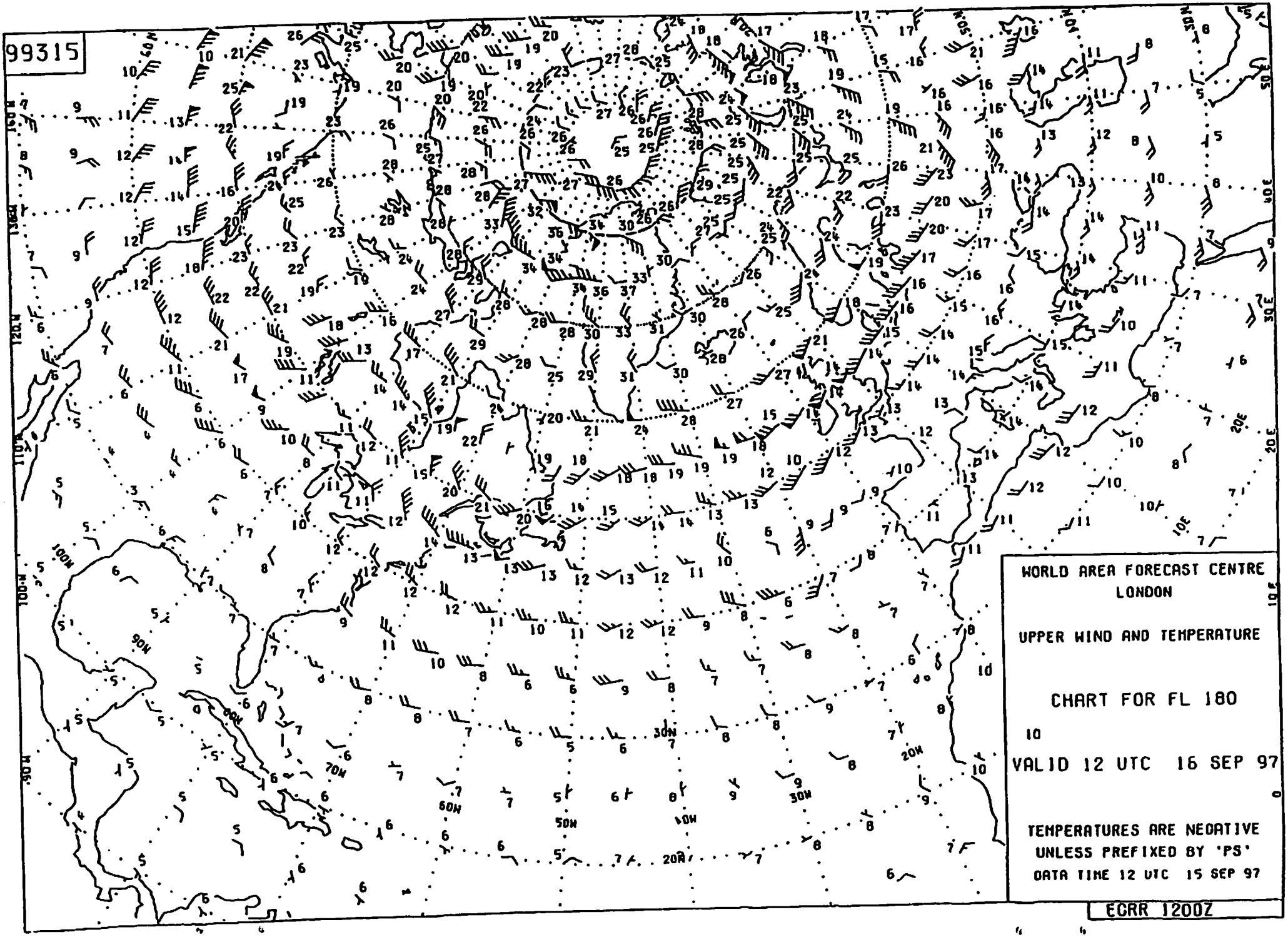

T 00Z TUES 16/ 9/97 VT 00Z WED 17/ 9/97 GMAIN T+ 24
- - -THICKNESS DM.
HEIGHT DM.
500-1000MB
500MB
PAGE. 001
MET_OFFICE_ARTIFAX_2
16 SEP 97 05:13
L568
576
582
588
L583
H591
540
534
528
524
546
592
558
564
570
552
POLAR STEREOGRAPHIC PROJECTION AT 60N SCALE 1:20M RUN TIME 03.40.11
CHART 27
PHDE50 EGRR 0000Z

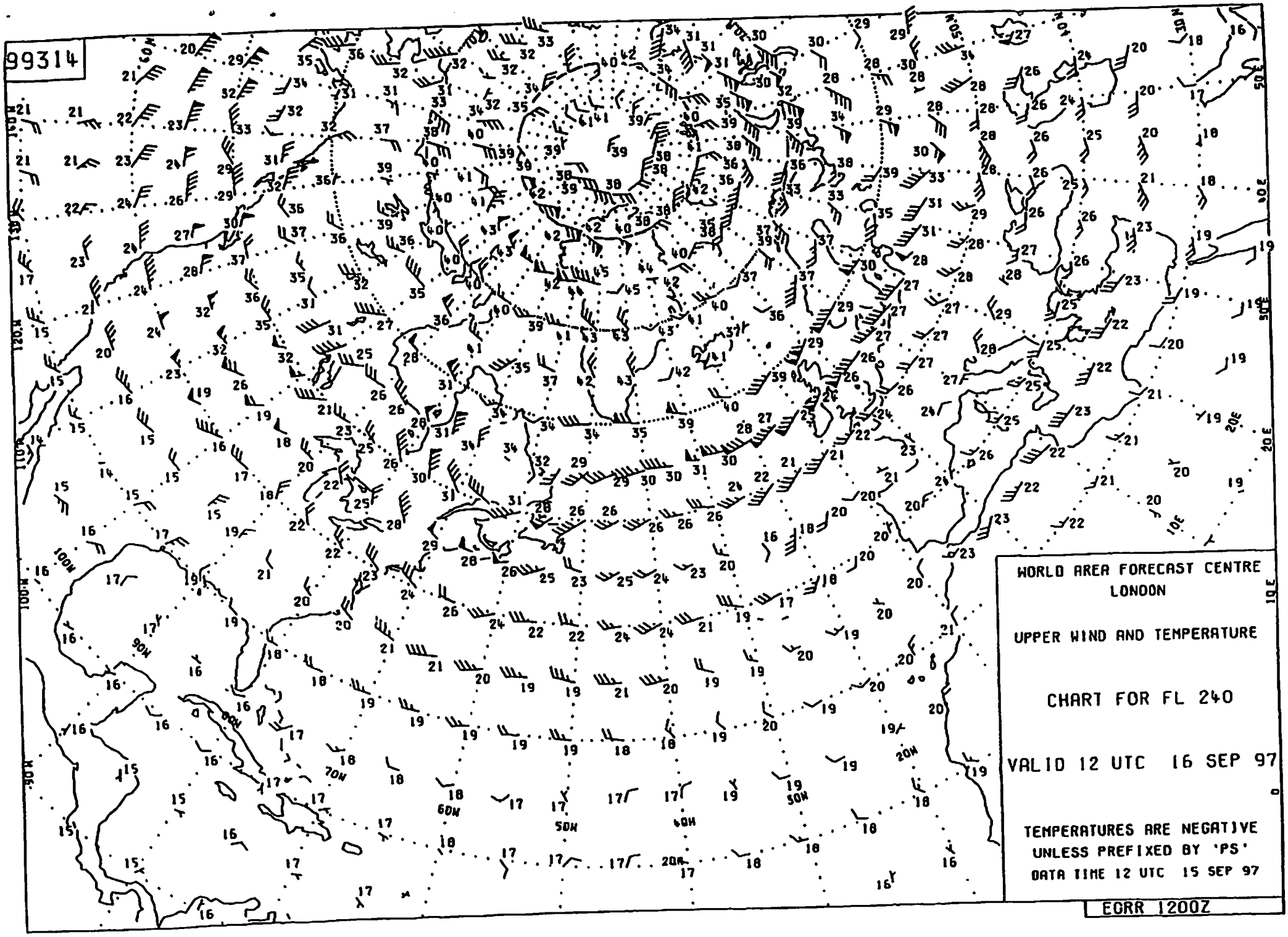

T 00Z TUES 16/ 9/97 VT 00Z TUES 16/ 9/97 GMAIN T+ 0
HEIGHT DM.
300MB
MET_OFFICE_ARTIFAX_6 PAGE. 001
16 SEP '97 05:10
POLAR STEREOGRAPHIC PROJECTION AT 60N SCALE 1:20M RUN TIME 03.32.08
CHART 27
PHDA30 EGRR 0000Z

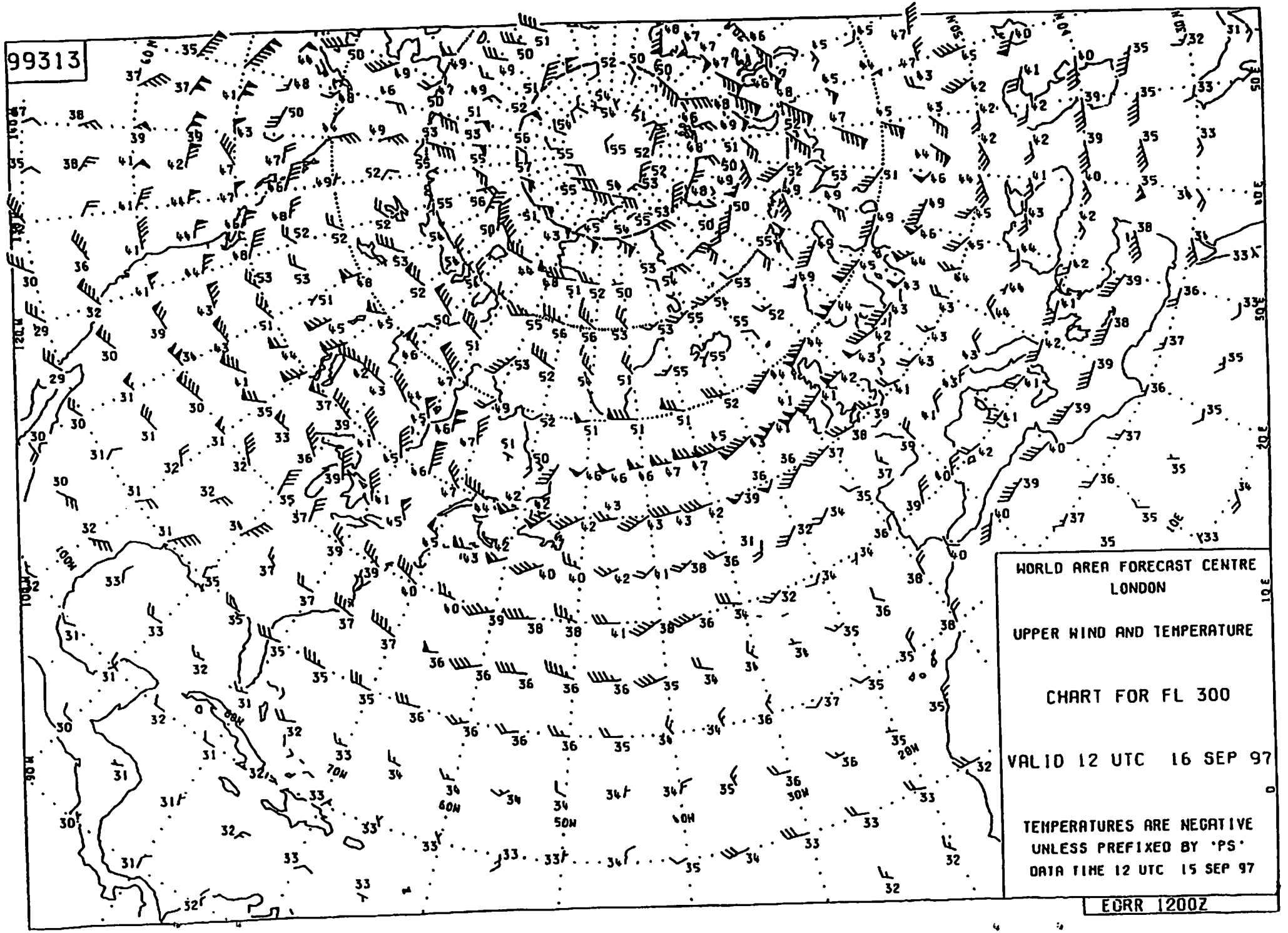

T 00Z TUES 16/ 9/97 VT 00Z WED 17/ 9/97 GMAIN T+ 24 HEIGHT DM. 300MB
MET_OFFICE_ARTIFAX_3 PAGE. 001
16 SEP '97 05:16
H958
L871
POLAR STEREOGRAPHIC PROJECTION AT 60N SCALE 1:20M RUN TIME 03.39.53
CHART 27
PHDE30 EGRR 0000Z

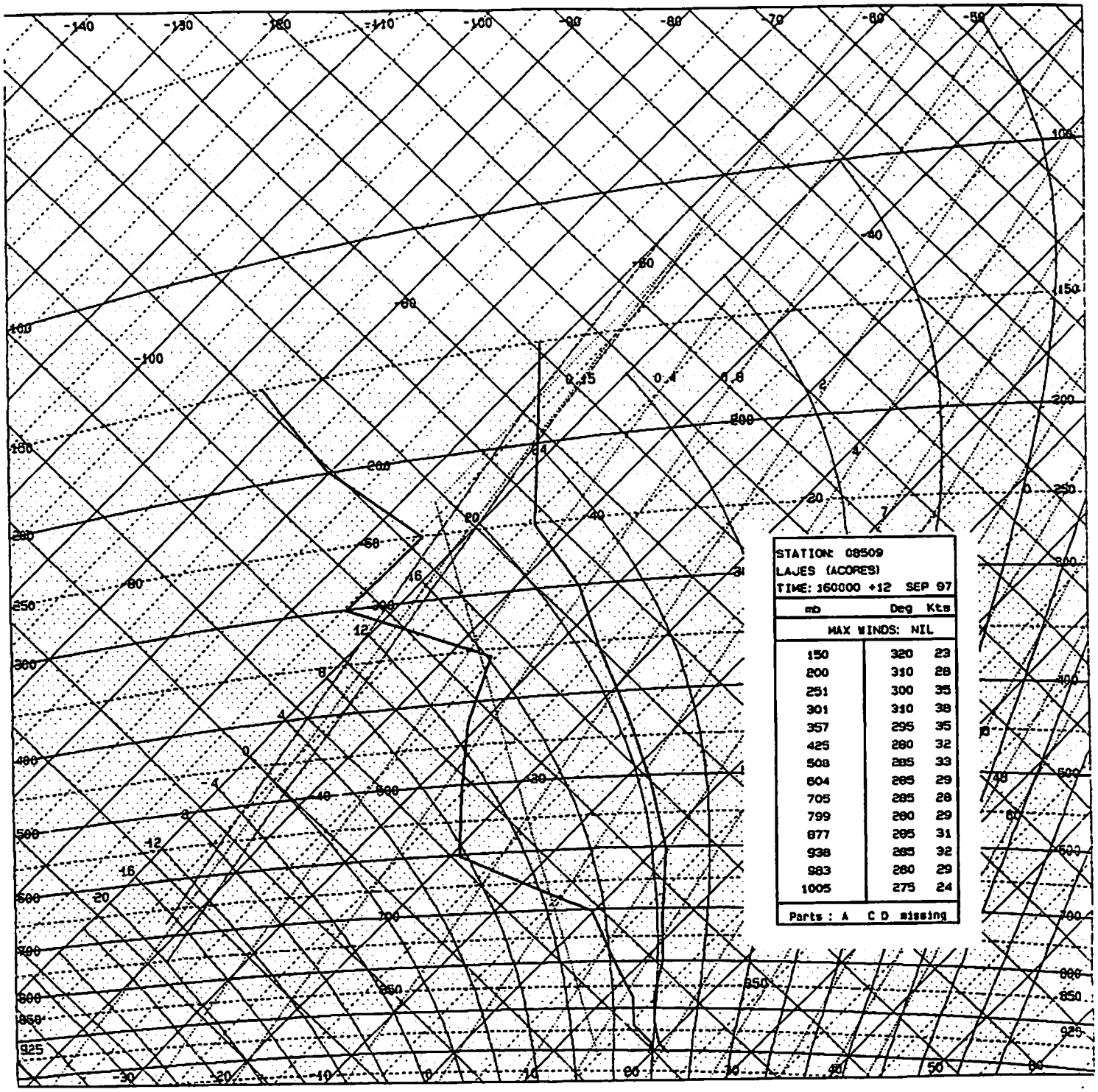

99317
WORLD AREA FORECAST CENTRE
LONDON
UPPER WIND AND TEMPERATURE
CHART FOR FL 050
VALID 12 UTC 16 SEP 97
TEMPERATURES ARE NEGATIVE
UNLESS PREFIXED BY 'PS'
DATA TIME 12 UTC 15 SEP 97
EGRR 1200Z


99316
WORLD AREA FORECAST CENTRE
LONDON
UPPER WIND AND TEMPERATURE
CHART FOR FL 100
VALID 12 UTC 16 SEP 97
TEMPERATURES ARE NEGATIVE
UNLESS PREFIXED BY 'PS'
DATA TIME 12 UTC 15 SEP 97
EGRR 1200Z


99315
WORLD AREA FORECAST CENTRE
LONDON
UPPER WIND AND TEMPERATURE
CHART FOR FL 180
VALID 12 UTC 16 SEP 97
TEMPERATURES ARE NEGATIVE
UNLESS PREFIXED BY 'PS'
DATA TIME 12 UTC 15 SEP 97
ECRR 1200Z


99314
WORLD AREA FORECAST CENTRE
LONDON
UPPER WIND AND TEMPERATURE
CHART FOR FL 240
VALID 12 UTC 16 SEP 97
TEMPERATURES ARE NEGATIVE
UNLESS PREFIXED BY 'PS'
DATA TIME 12 UTC 15 SEP 97
EGRR 1200Z

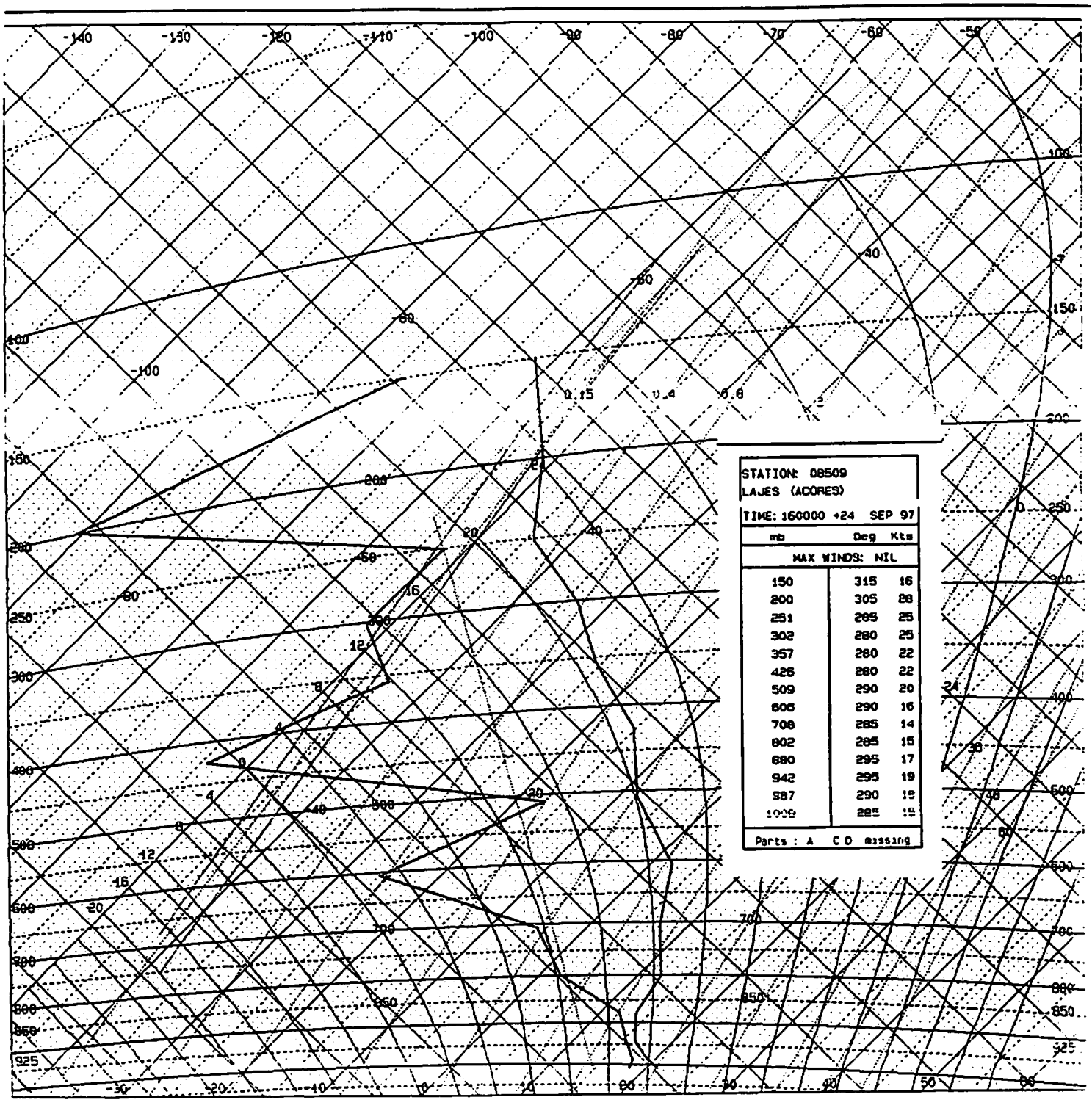


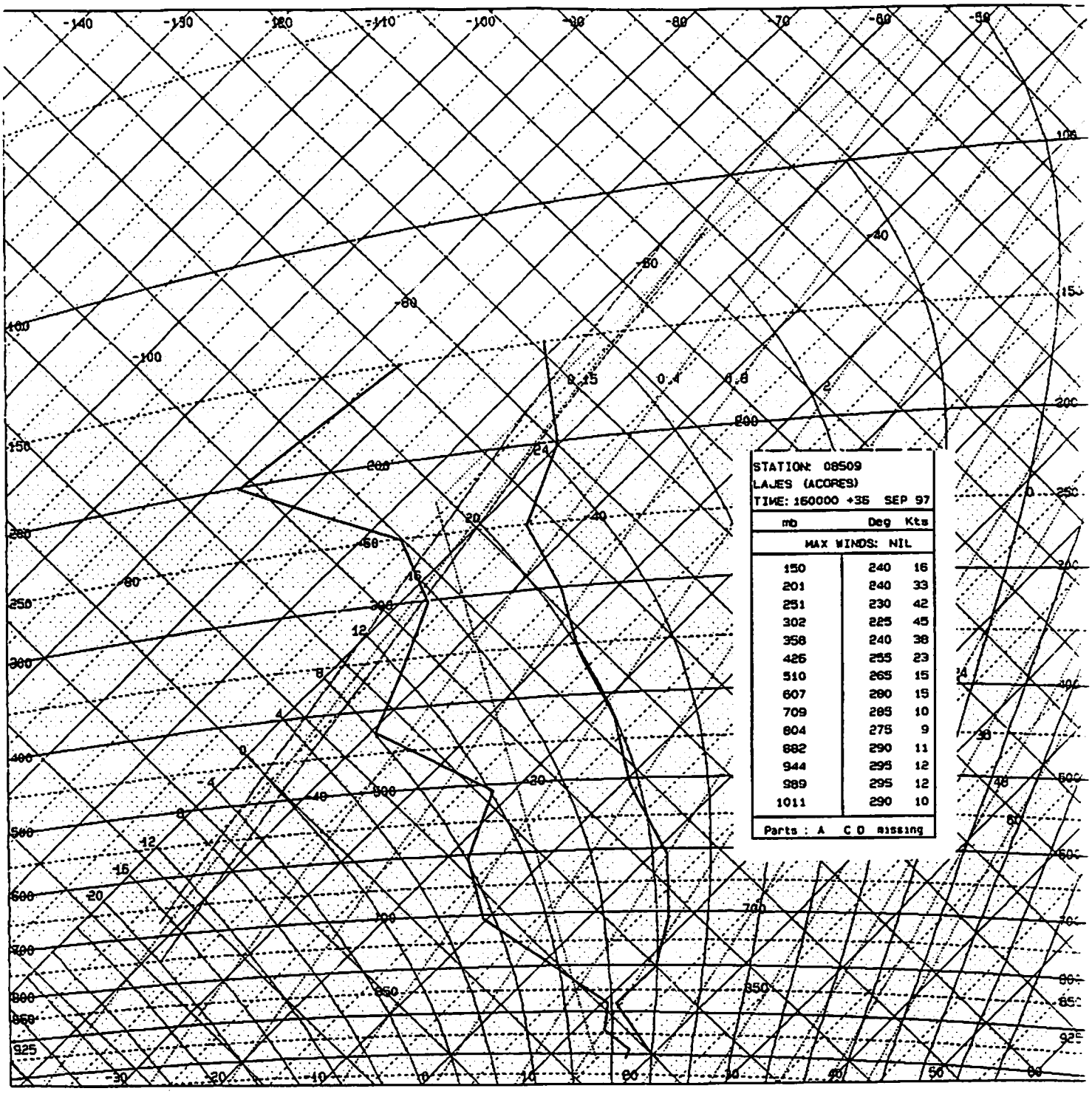


STATION: 08509
LAJES (ACORES)
TIME: 160000 +12 SEP 97

mb	Deg	Kts
MAX WINDS: NIL		
150	320	23
200	310	28
251	300	35
301	310	38
357	295	35
425	280	32
508	285	33
604	285	29
705	285	28
799	280	29
877	285	31
938	285	32
983	280	29
1005	275	24

Parts : A C D missing


STATION: 08509
LAJES (ACORES)
TIME: 160000 +24 SEP 97
mb Deg Kts
MAX WINDS: NIL
150 315 16
200 305 28
251 285 25
302 280 25
357 280 22
426 280 22
509 290 20
606 290 16
708 285 14
802 285 15
880 295 17
942 295 19
987 290 19
1009 285 19
Parts : A C D missing

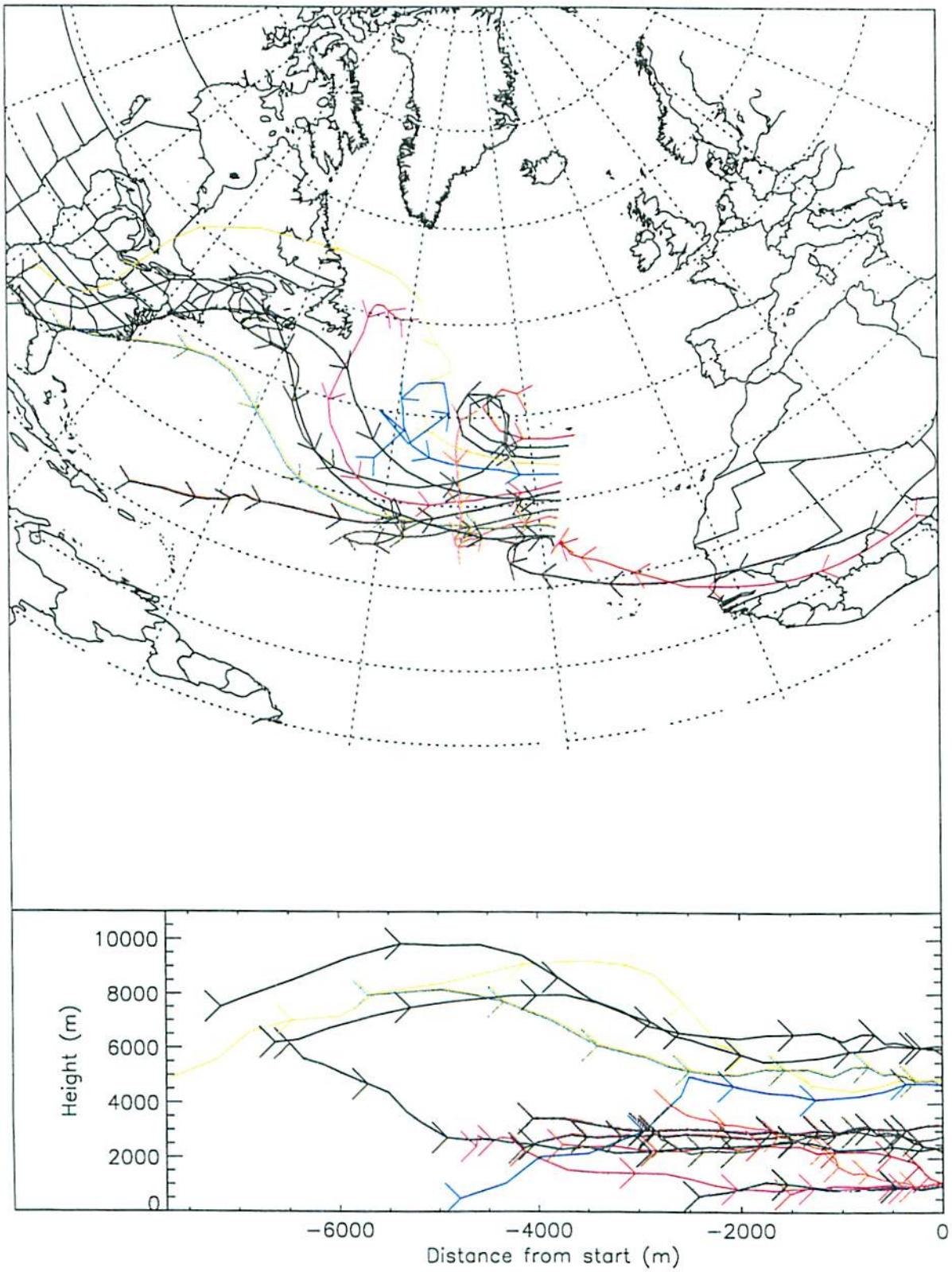

STATION: 08509
LAJES (ACORES)
TIME: 150000 +35 SEP 97
mb Deg Kts
MAX WINDS: NIL
150 240 16
201 240 33
251 230 42
302 225 45
358 240 38
426 255 23
510 265 15
607 280 15
709 285 10
804 275 9
882 290 11
944 295 12
989 295 12
1011 290 10
Parts : A C D missing

A576

From 0Z 10/ 9/1997 to 18Z 16/ 9/1997

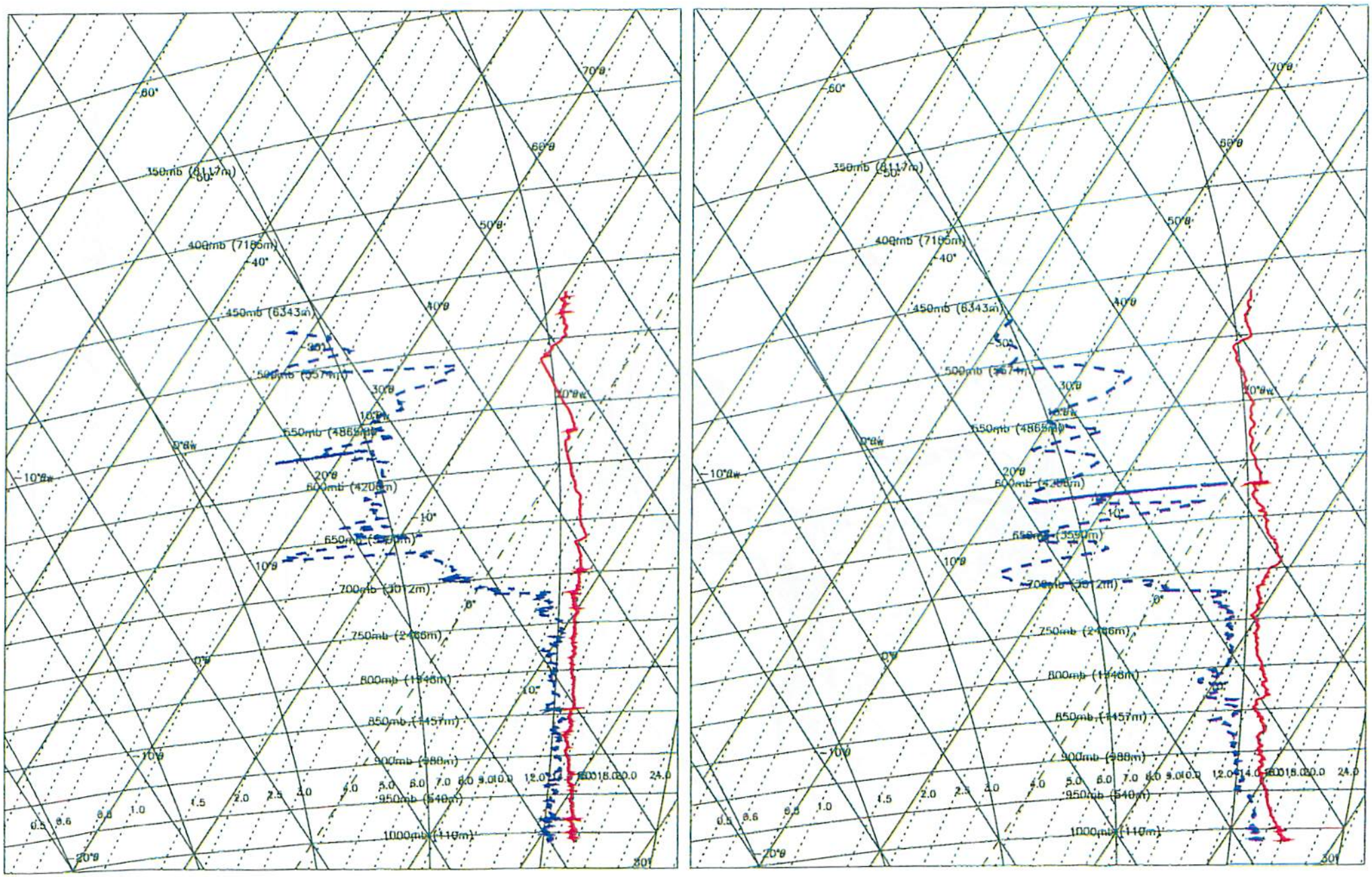
Arrows every 24 hrs

Plotted 19-May-1998 08:46



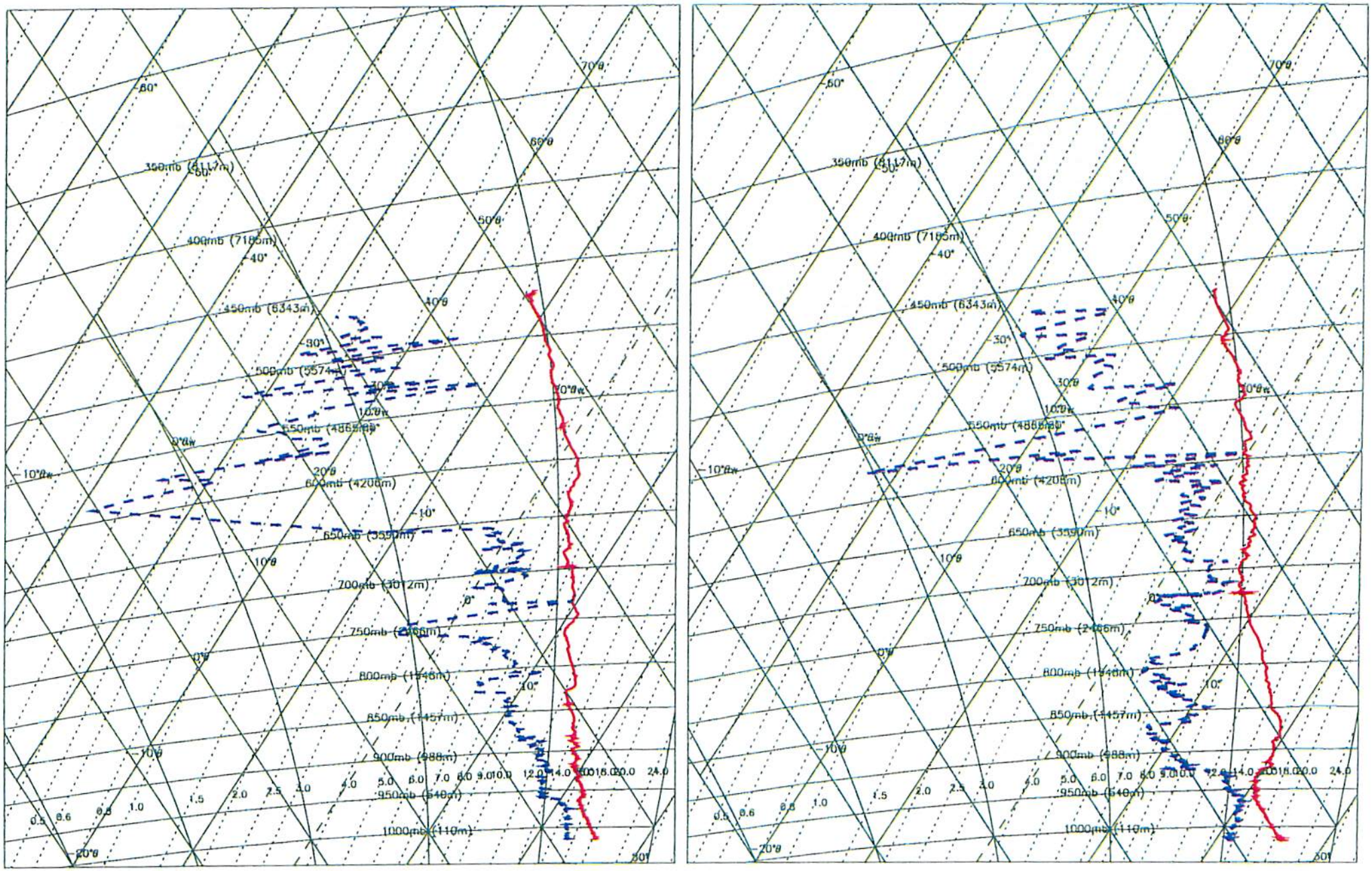
A576 16-SEP-97

P1 50'-FL200 (+bottles)(125031-132835) + P2 FL200-50'(133010-135233)



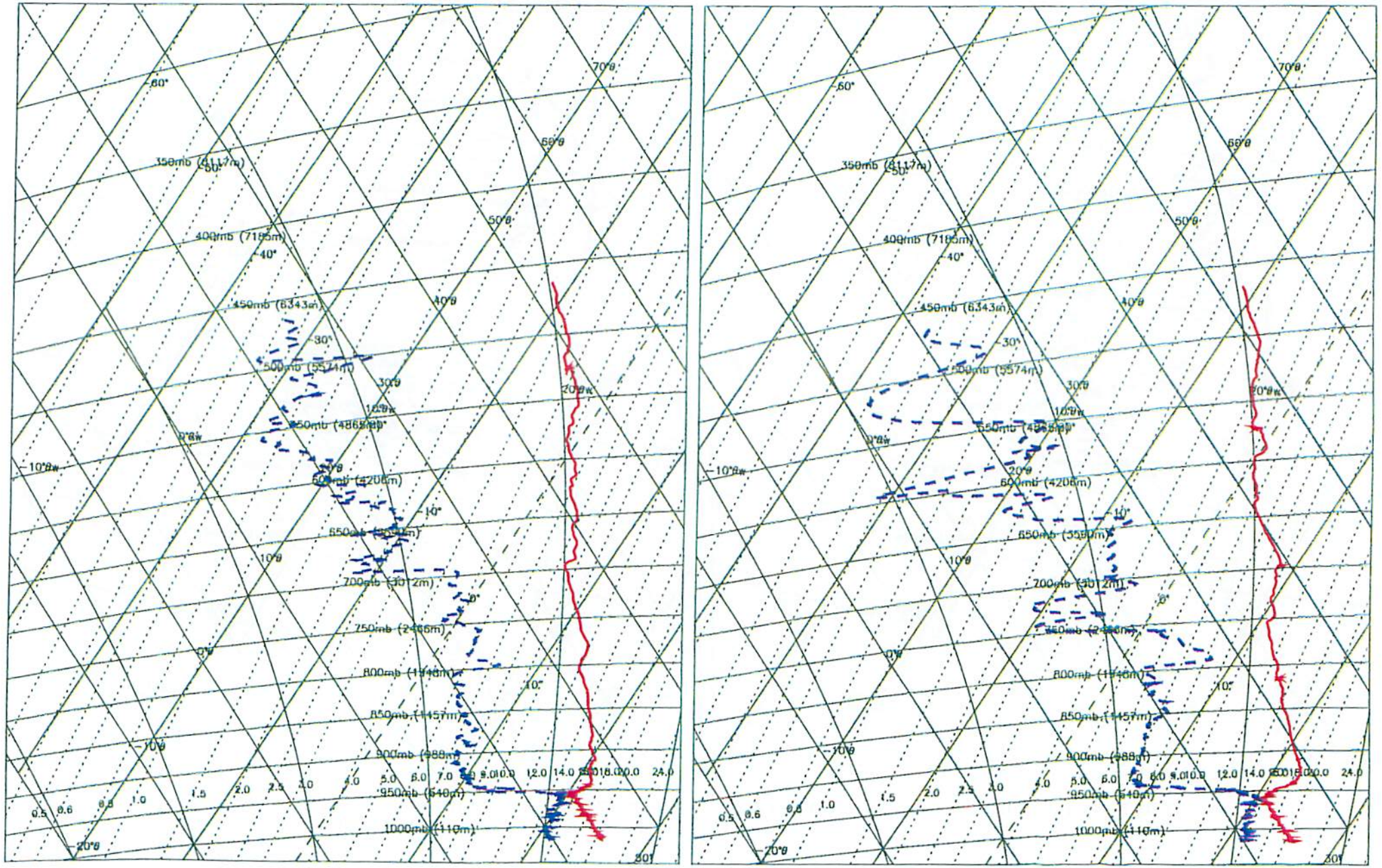
A576 16-SEP-97

P3 50'-FL200 (+bottles)(135233-142804) + P4 FL200-50' (+bottles)(142925-145759)



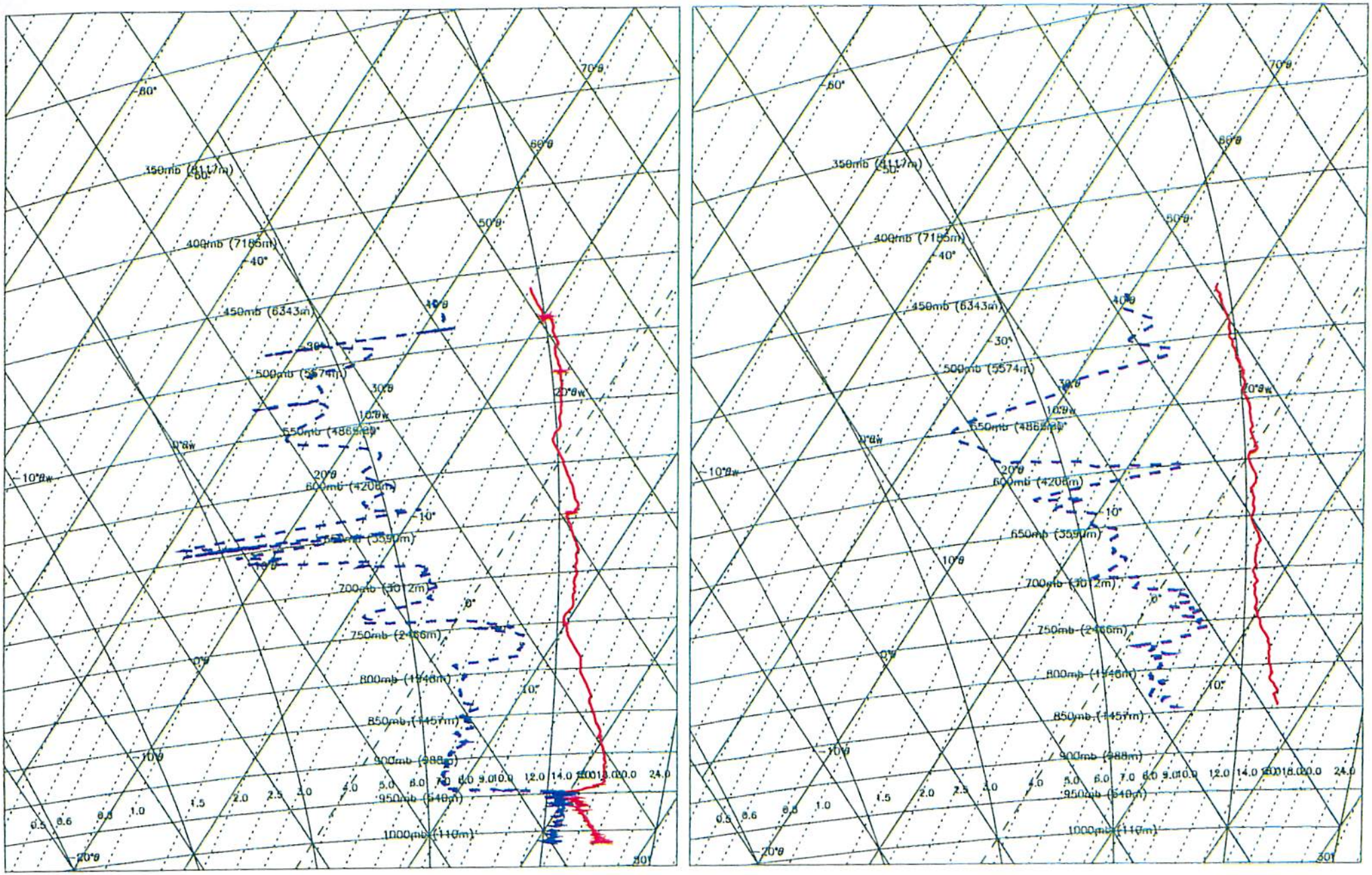
A576 16-SEP-97

P5 50'-FL200 (+bottles)(145759-153124) + P6 FL200-50' (+bottles)(153518-160821)



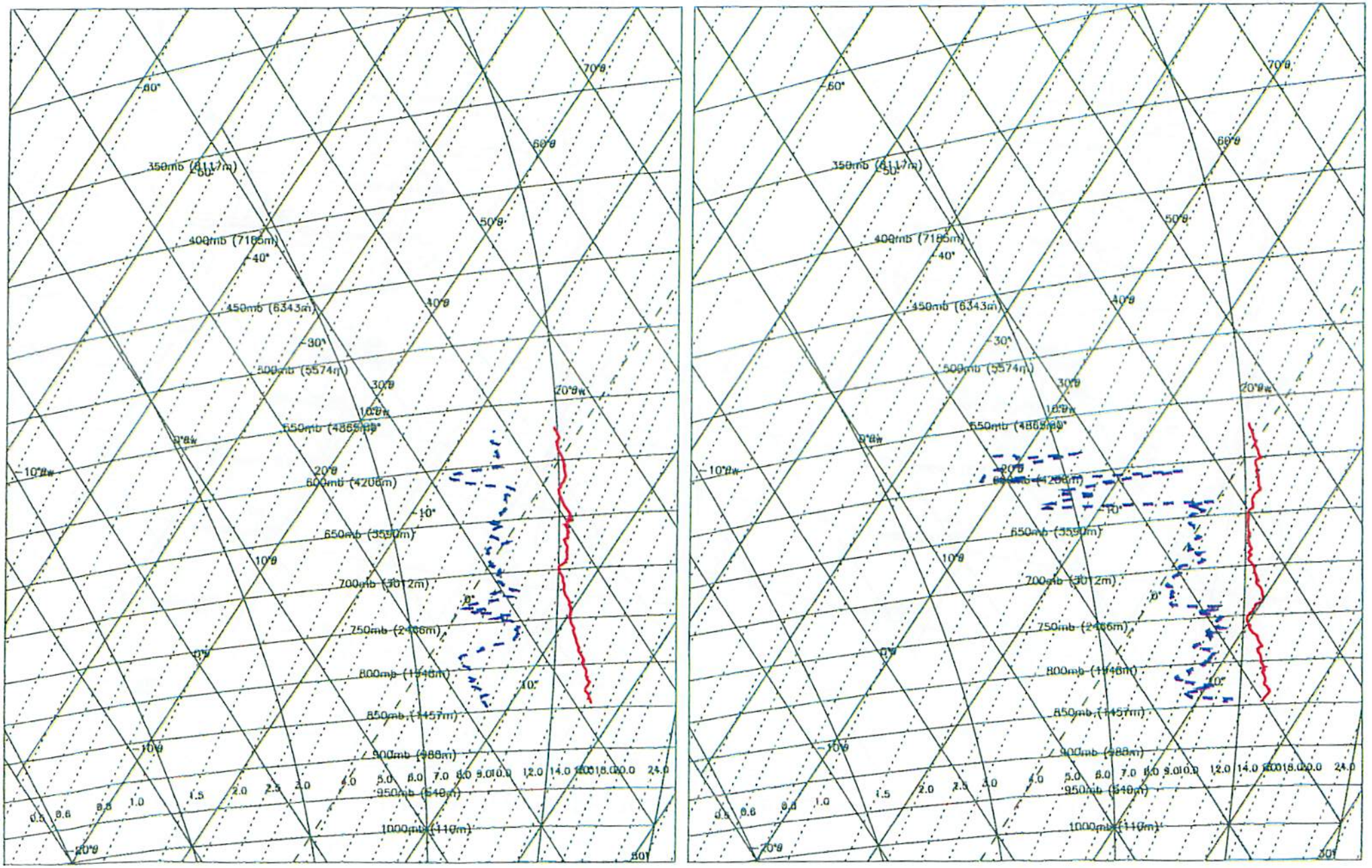
A576 16-SEP-97

P7 50'-FL200 (+bottles+R2)(160821-170217) + P8 FL200-FL50(170217-171814)



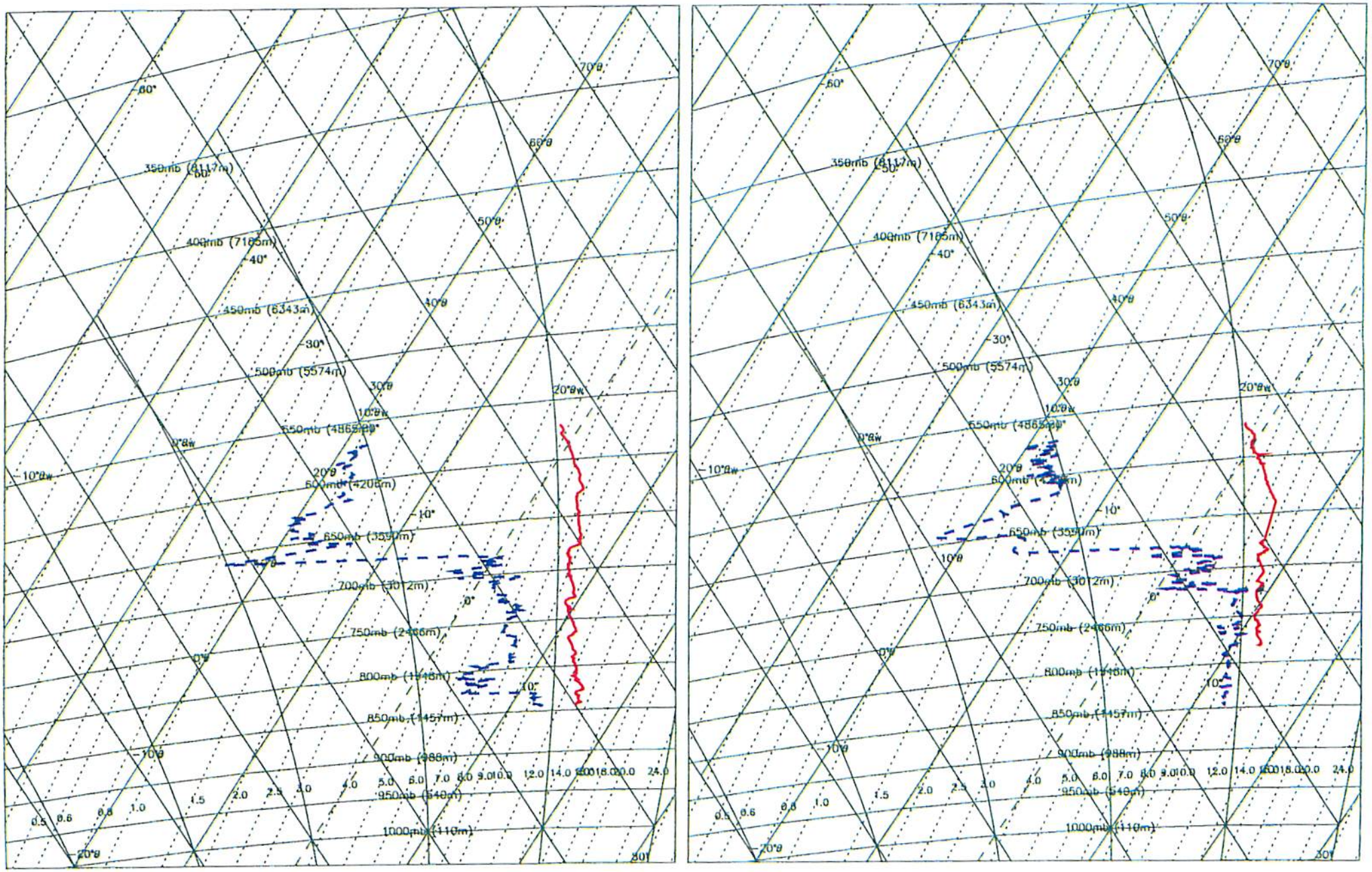
A576 16-SEP-97

P9 FL50-FL150(171814-172827) + P10 F150-FL50(173141-174211)



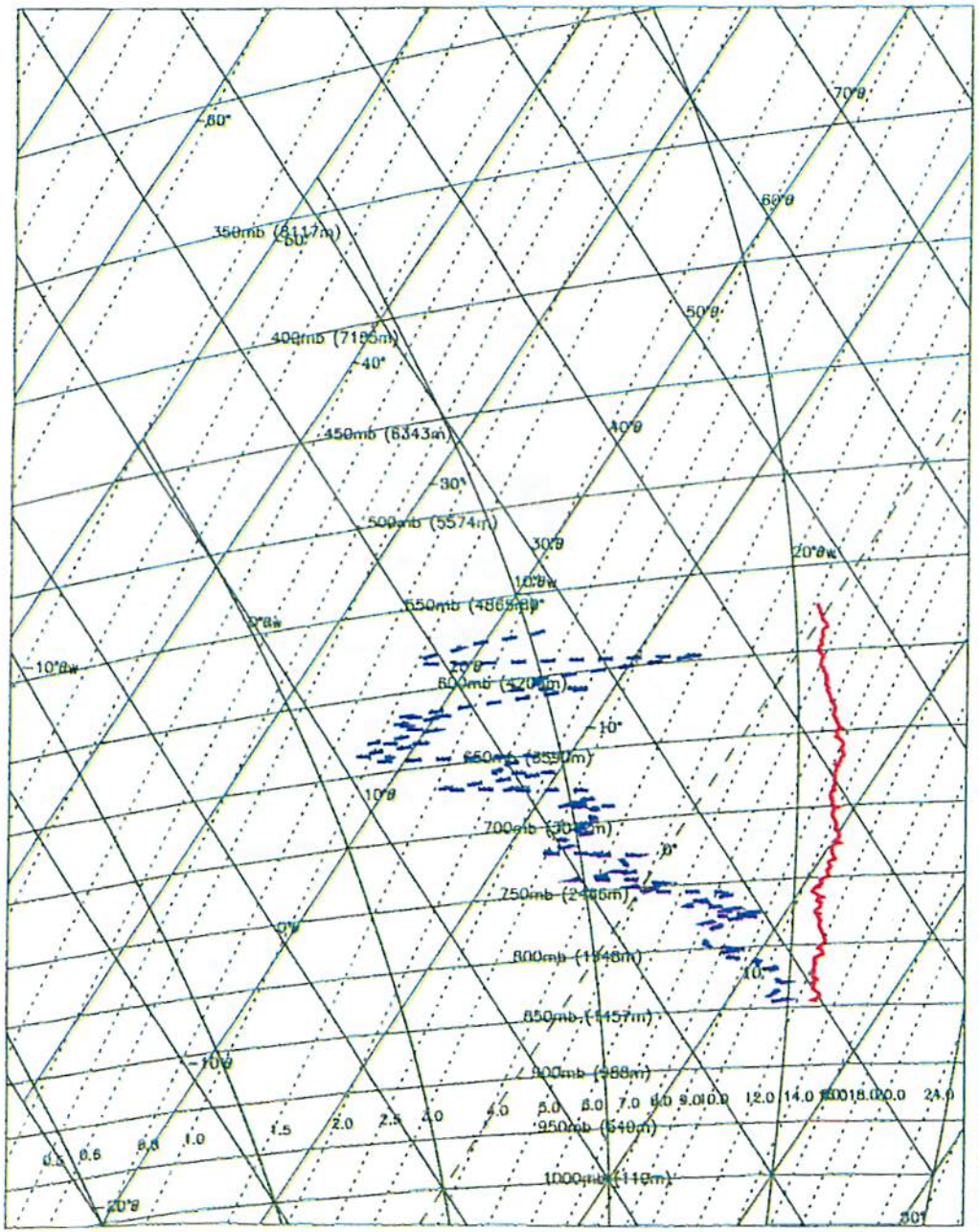
A576 16-SEP-97

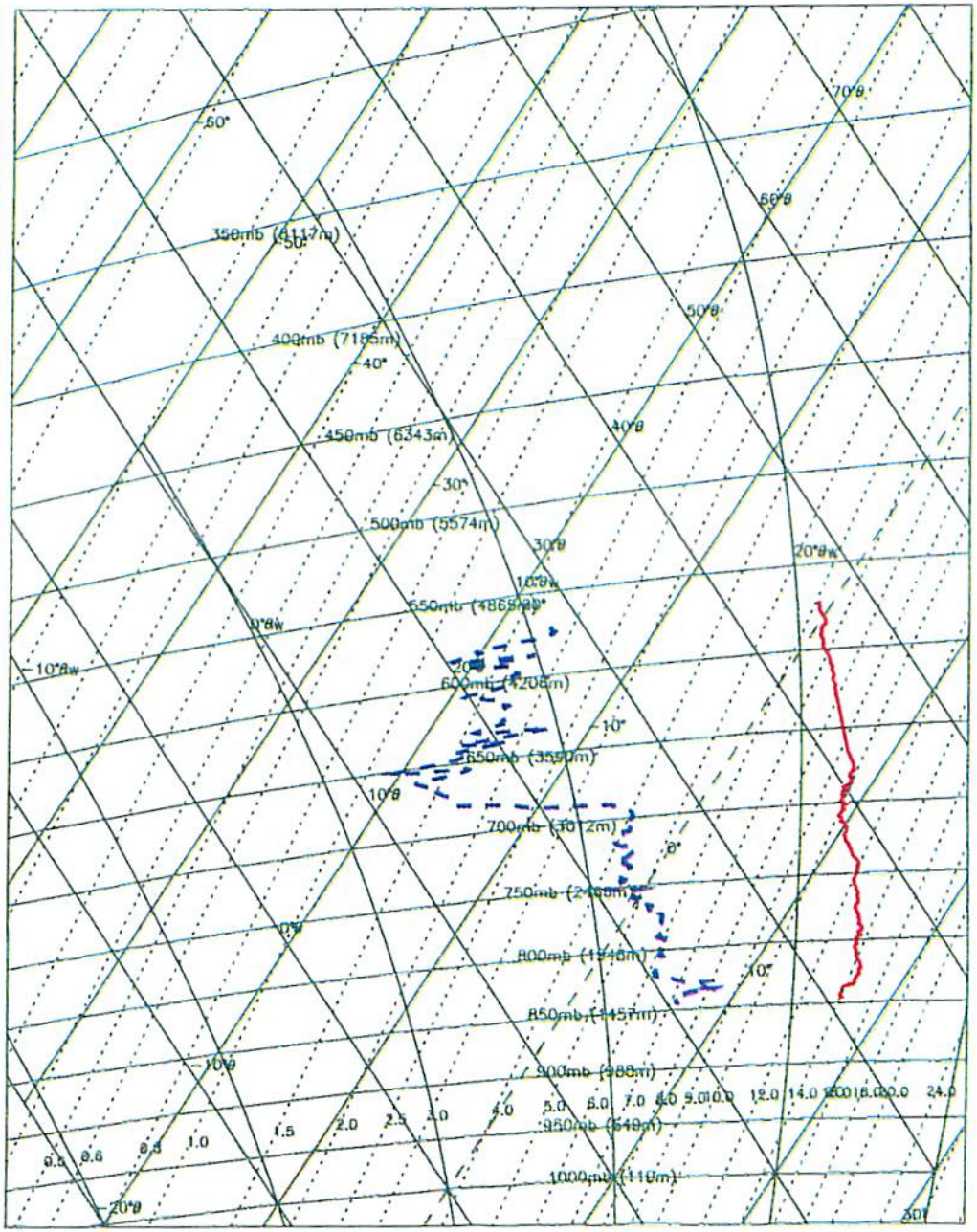
P11 FL50-FL150(174211-175252) + P12 FL150-FL50(175252-180440)



A576 16-SEP-97

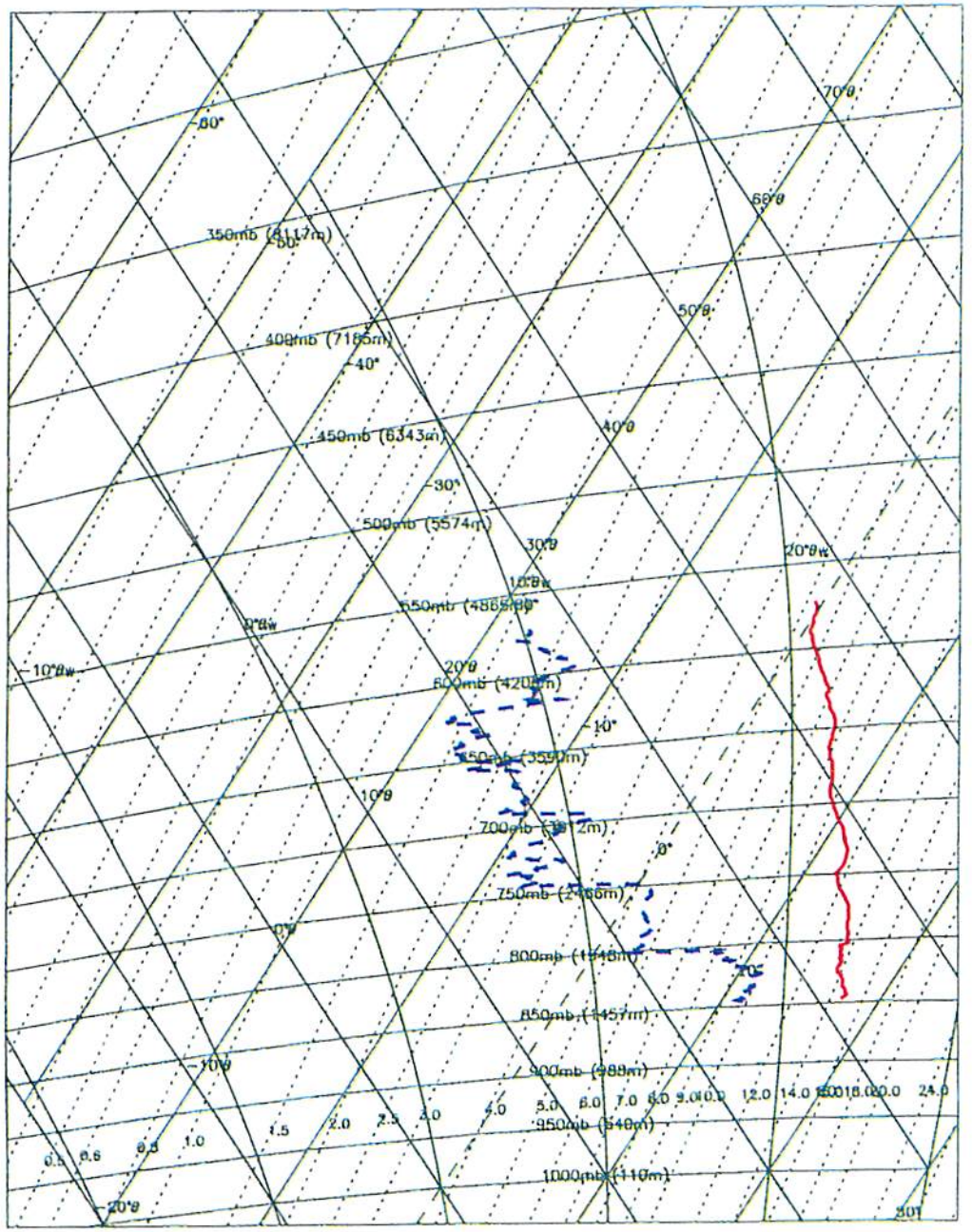
P13 FL50-FL150(180727-181807) + P14 FL150-FL50(181807-182818)



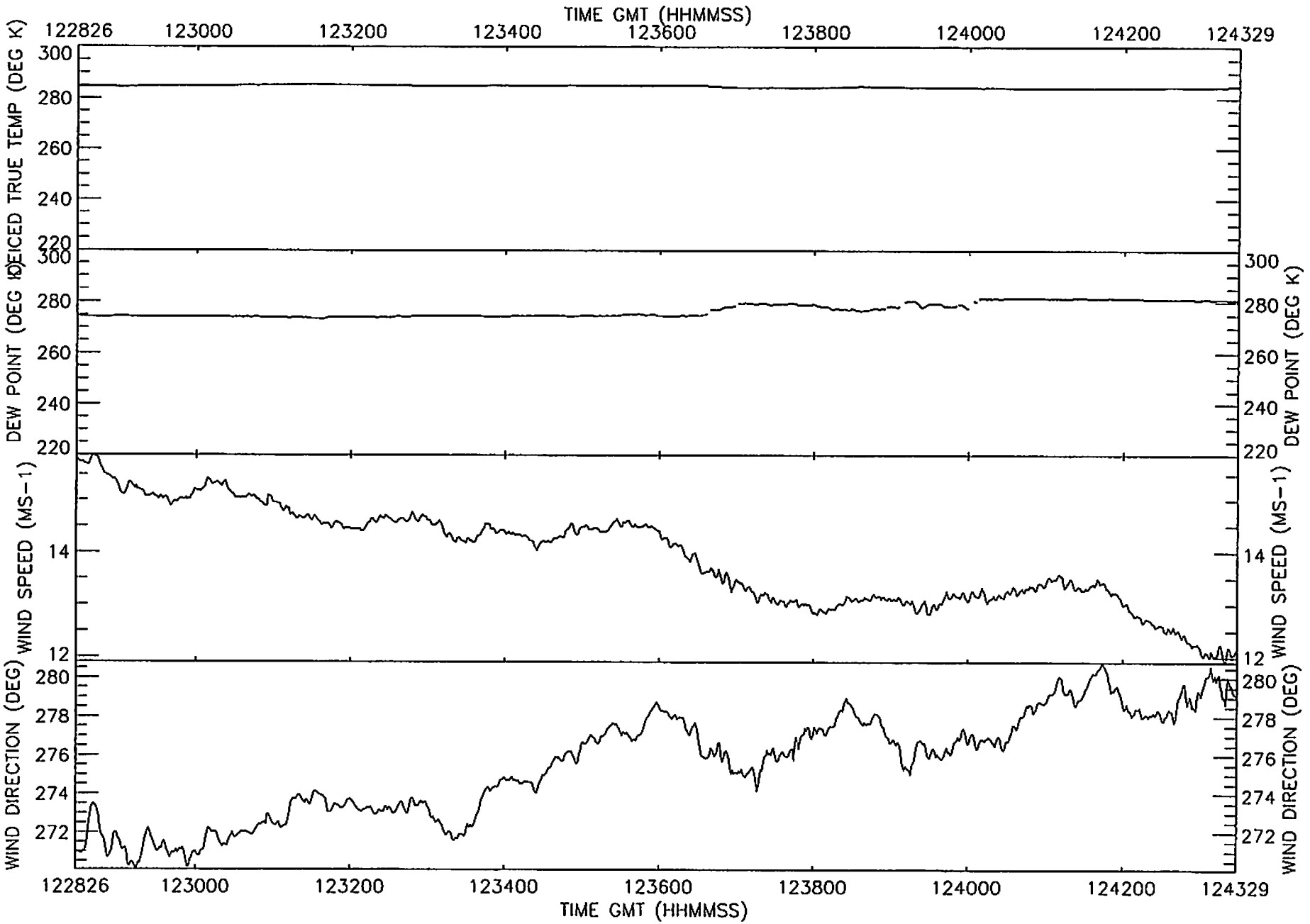


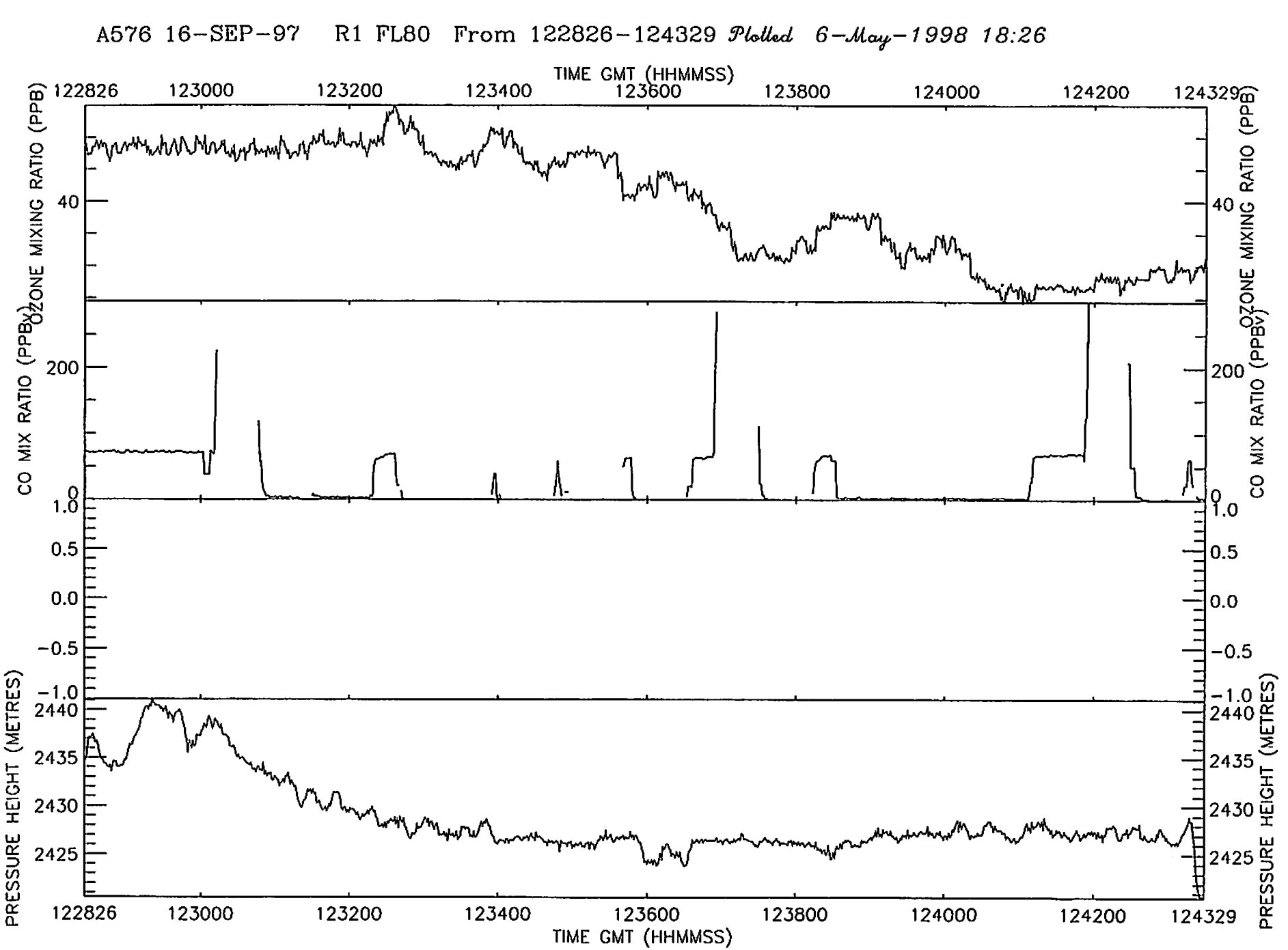
A576 16-SEP-97

P15 FL50-FL150 (183040-184102)

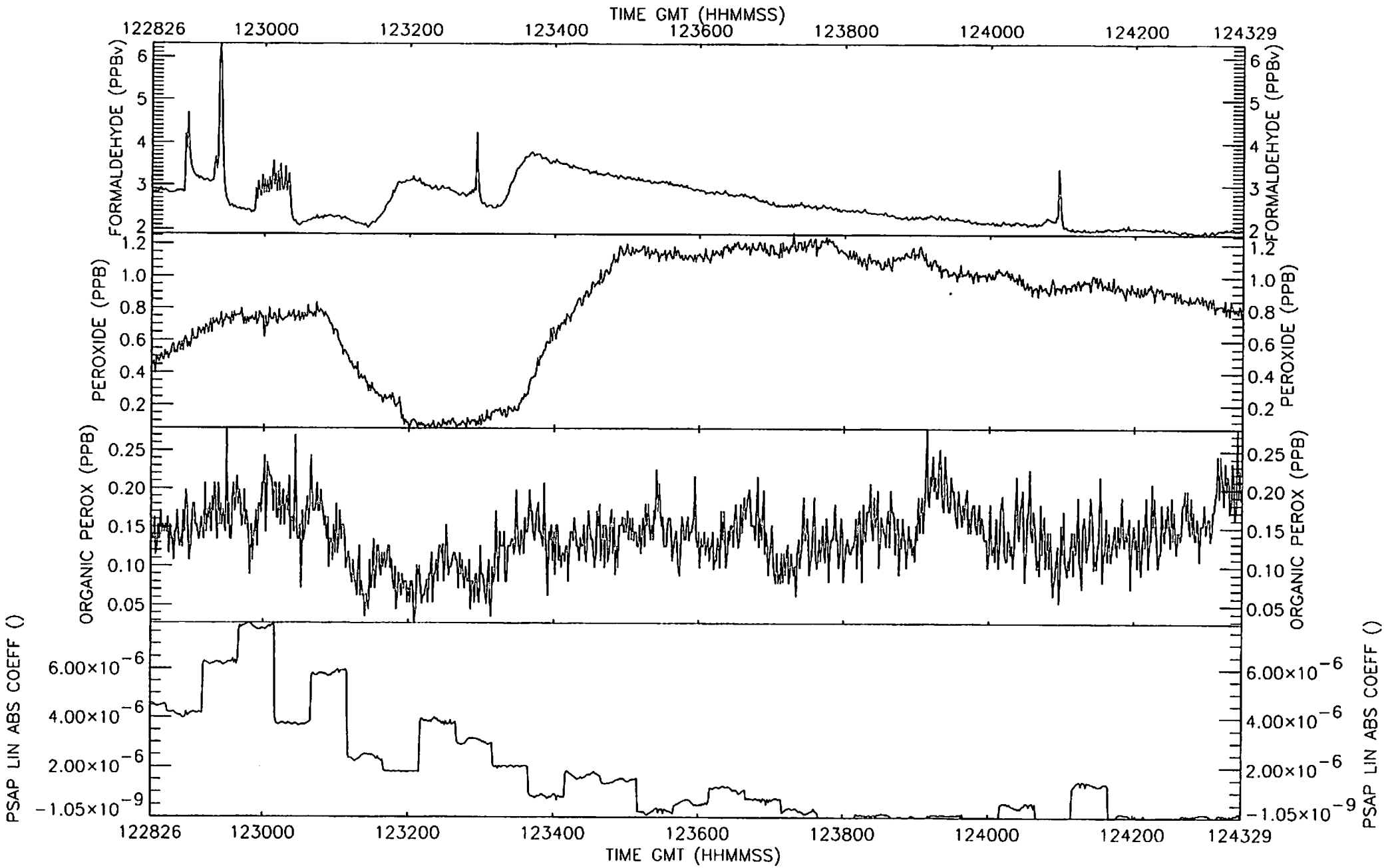


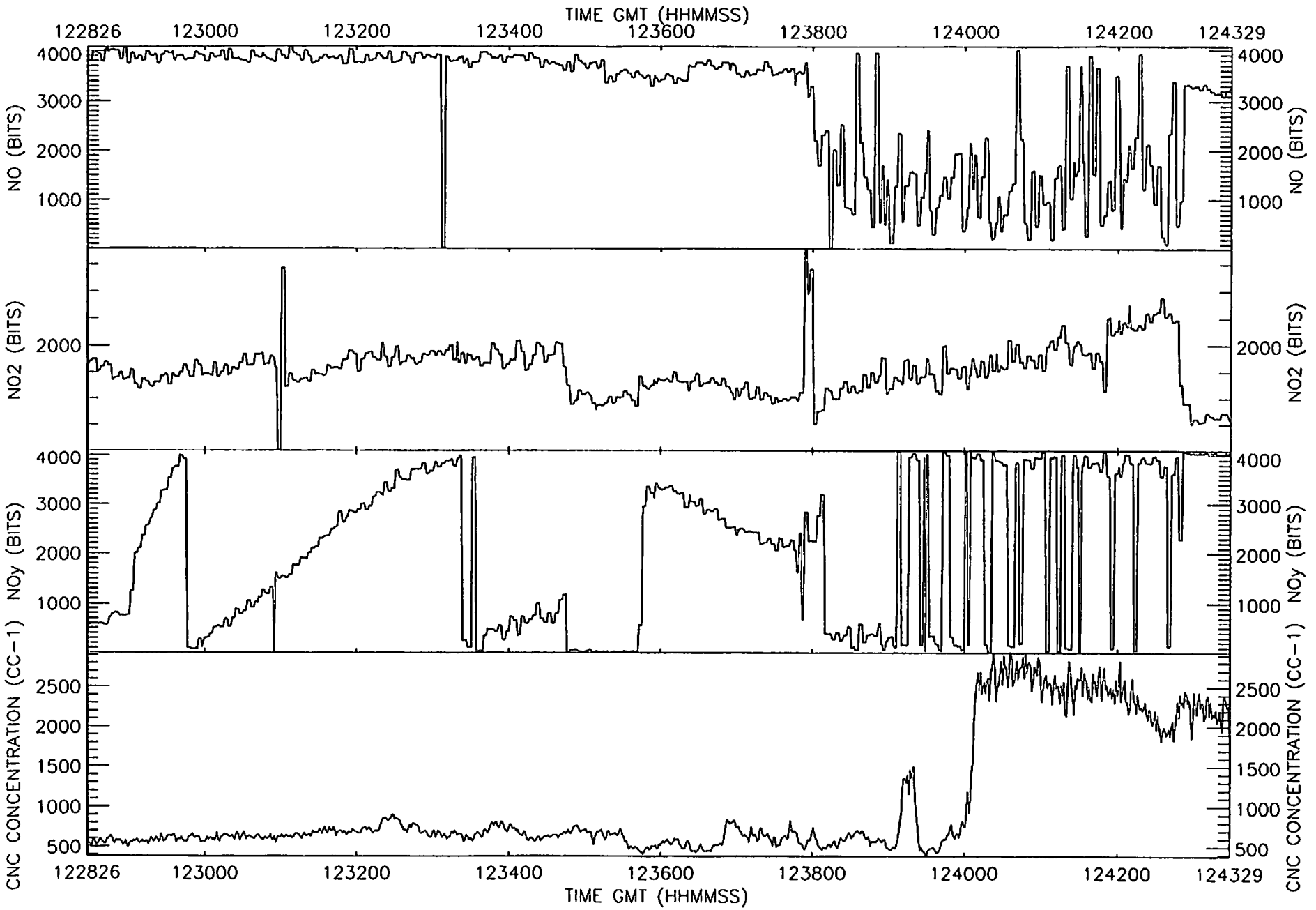
A576 16-SEP-97 R1 FL80 From 122826-124329 *Plotted 6-May-1998 18:26*




A576 16-SEP-97 R1 FL80 From 122826-124329 Plotted 6-May-1998 18:26
TIME GMT (HHMMSS)
122826
123000
123200
123400
123600
123800
124000
124200
124329
OZONE MIXING RATIO (PPB)
40
CO MIX RATIO (PPBV)
200
0
1.0
0.5
0.0
-0.5
-1.0
PRESSURE HEIGHT (METRES)
2440
2435
2430
2425

A576 16-SEP-97 R1 FL80 From 122826-124329 *Plotted 6-May-1998 18:26*




A576 16-SEP-97 R1 FL80 From 122826-124329 Plotted 6-May-1998 18:26
TIME GMT (HHMMSS)
122826
123000
123200
123400
123600
123800
124000
124200
124329
NO (BITS)
4000
3000
2000
1000
NO2 (BITS)
2000
4000
NOy (BITS)
4000
3000
2000
1000
CNC CONCENTRATION (CC-1)
2500
2000
1500
1000
500
TIME GMT (HHMMSS)

A576 16-SEP-97 R1 FL80 From 122826-124329 *Plotted 6-May-1998 18:26*

STATIC PRESSURE (MB)
No of obs 904
Mean 753.528
Standard dev 0.381991
Max value 754.306
Min value 752.366

DEICED TRUE TEMP (DEG K)
No of obs 904
Mean 284.699
Standard dev 0.362565
Max value 285.549
Min value 284.075

DEW POINT (DEG K)
No of obs 904
Mean 276.847
Standard dev 2.97148
Max value 281.645
Min value 273.355

OZONE MIXING RATIO (PPB)
No of obs 904
Mean 40.0336
Standard dev 8.77087
Max value 54.9080
Min value 24.5334

PSAP LIN ABS COEFF ()
No of obs 904
Mean 1.720670e-06
Standard dev 2.084710e-06
Max value 7.850838e-06
Min value -1.046657e-09

No good data

PRESSURE HEIGHT (METRES)
No of obs 904
Mean 2428.78
Standard dev 4.04254
Max value 2441.08
Min value 2420.56

CORRECTED LATITUDE (DEGREES)
No of obs 904
Mean 36.0385
Standard dev 0.267009
Max value 36.4960
Min value 35.5875

CORRECTED LONGITUDE (DEGREES)
No of obs 904
Mean -25.9694
Standard dev 0.252330
Max value -25.5698
Min value -26.4298

NORTHWARD WIND COMPT (M S-1)
No of obs 904
Mean -1.30124
Standard dev 0.601960
Max value -2.217865e-02
Min value -2.52193

EASTWARD WIND COMPT (M S-1)
No of obs 904
Mean 13.8508
Standard dev 0.971444
Max value 15.8555
Min value 11.7618

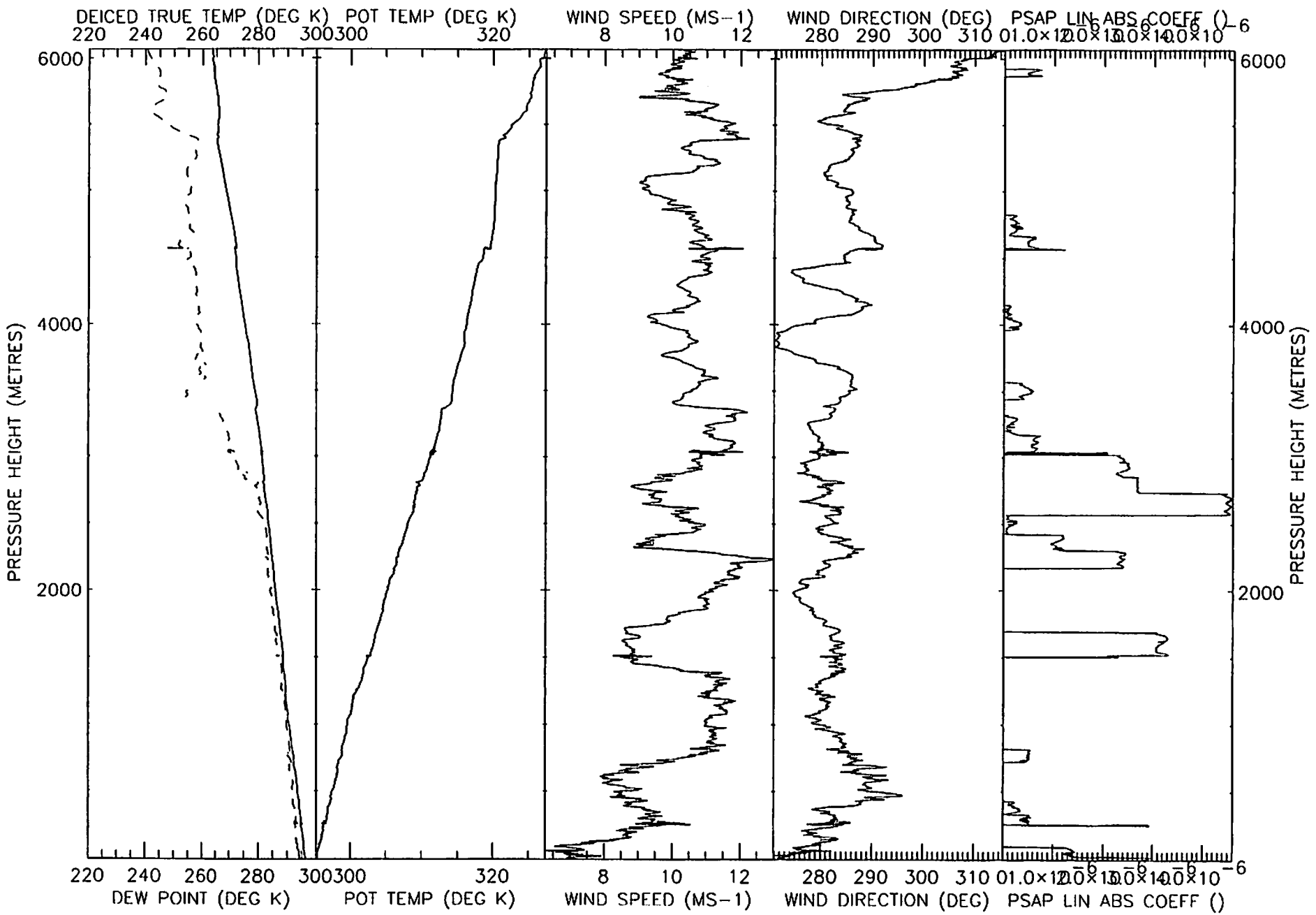
VERTICAL WIND COMPT (M S-1)
No of obs 904
Mean -0.346951
Standard dev 0.331501
Max value 0.270744
Min value -1.41764

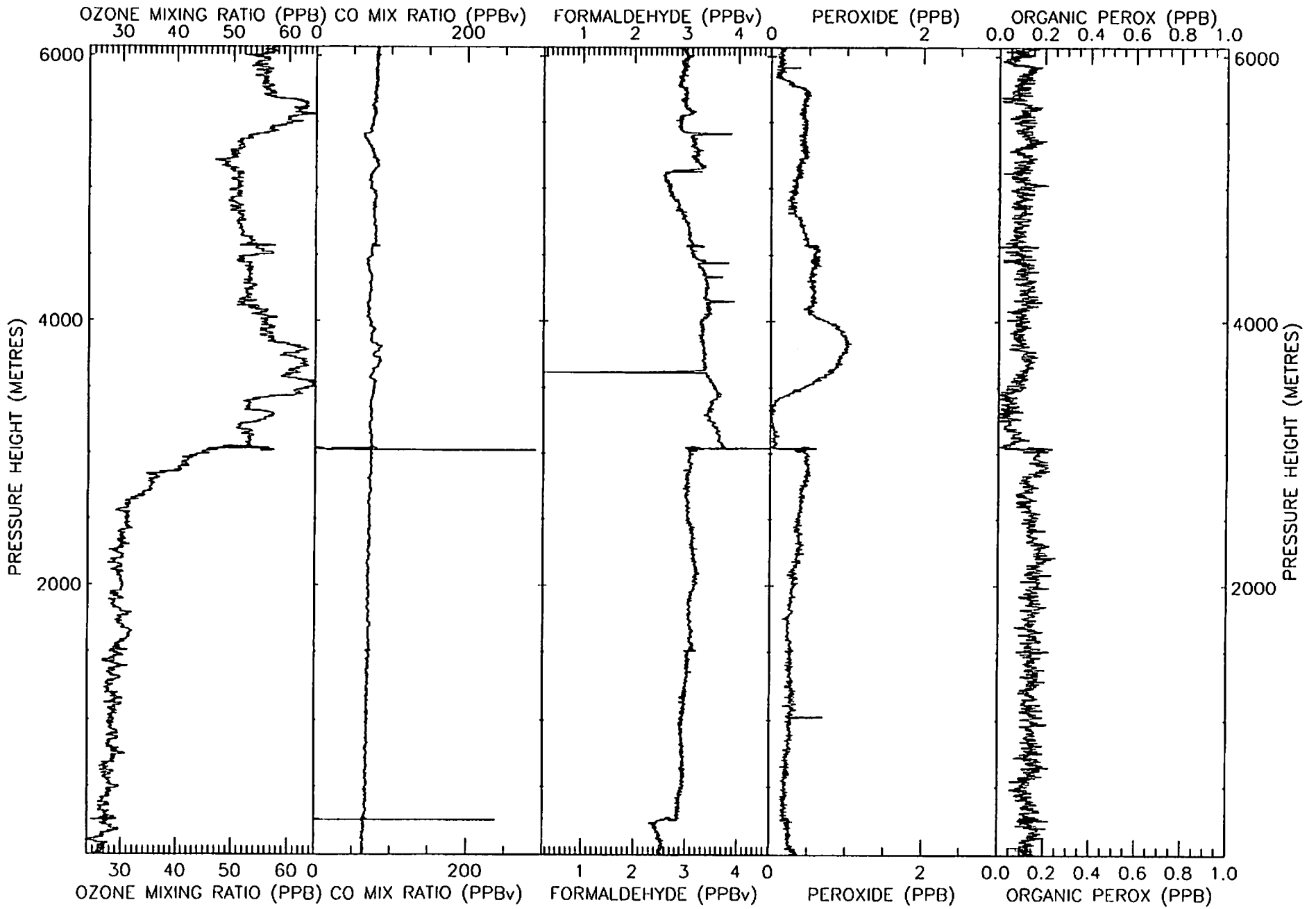
WIND SPEED (MS-1)
No of obs 904
Mean 13.9278
Standard dev 0.928137
Max value 15.8840
Min value 11.8987

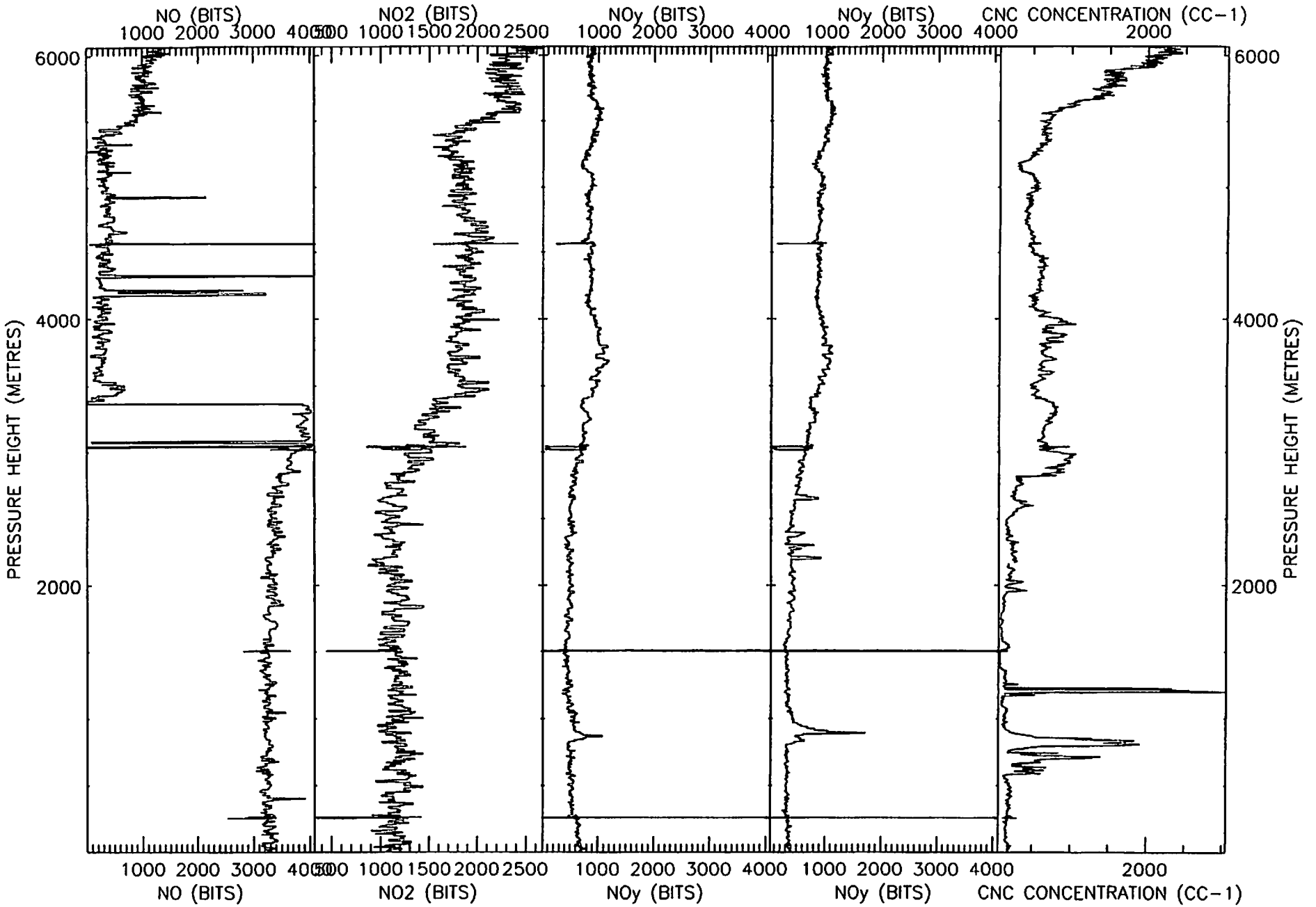
WIND DIRECTION (DEG)
Mean 275.367

TRUE AIR SPEED (M S-1)
No of obs 904
Mean 149.047
Standard dev 7.88512
Max value 153.239
Min value 113.227

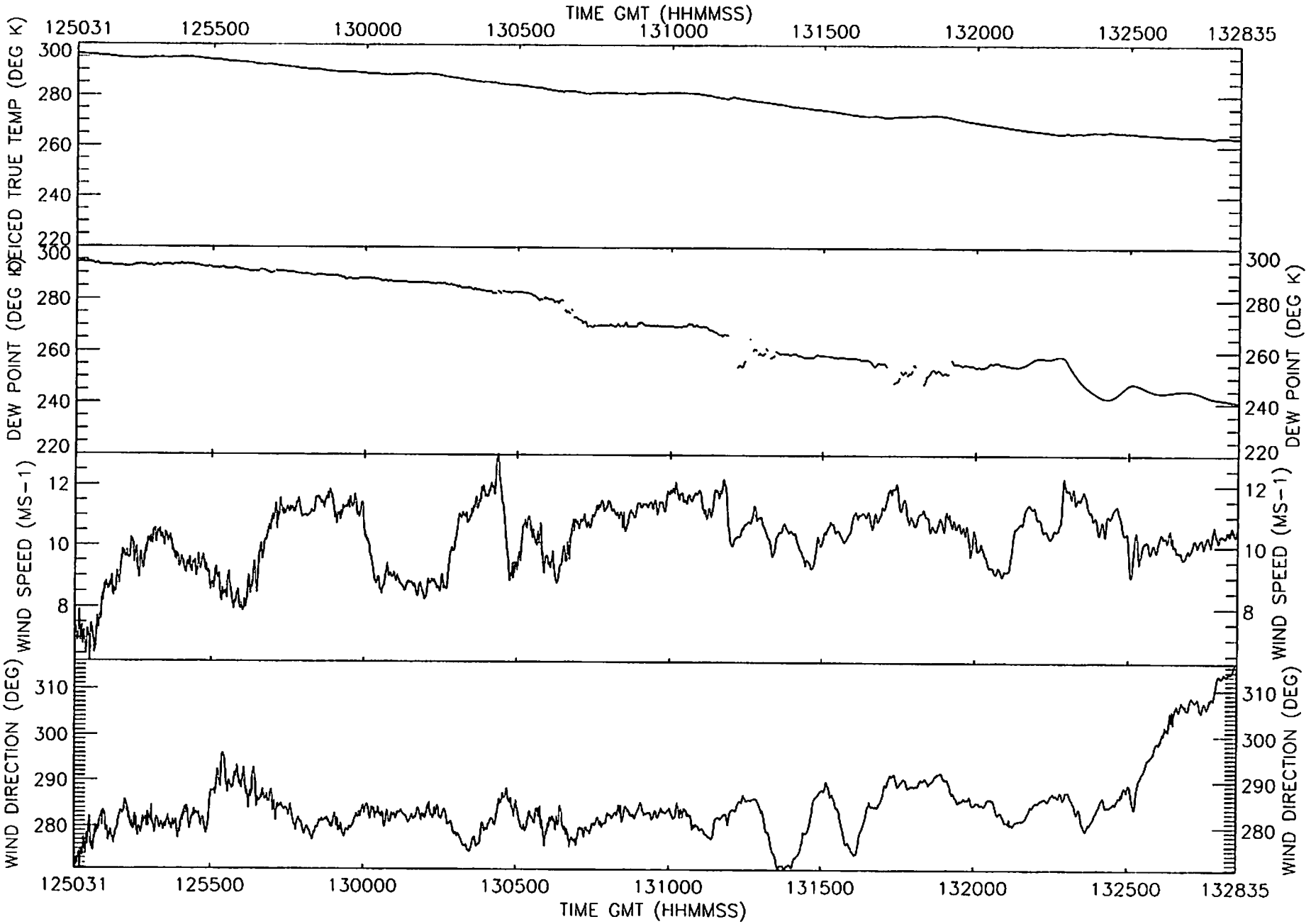
HEADING (DEG)
Mean 217.570

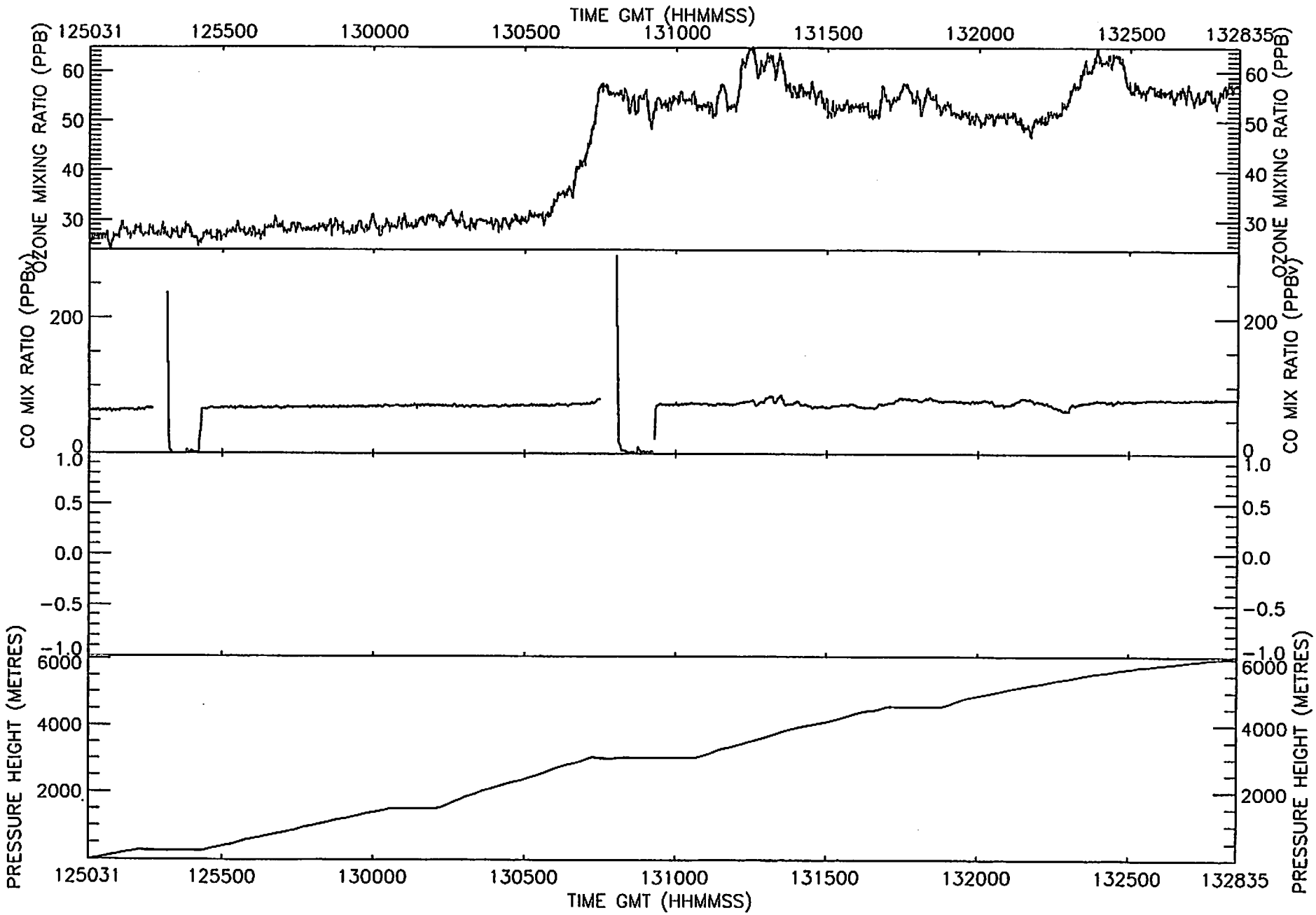

A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 Plotted 6-May-1998 18:35
DEICED TRUE TEMP (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()
220 240 260 280 300
300 320
8 10 12
280 290 300 310 0
1.0×10-6 2.0×10-6 3.0×10-6 4.0×10-6
6000
4000
2000
PRESSURE HEIGHT (METRES)
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()


A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 Plotted 6-May-1998 18:36
OZONE MIXING RATIO (PPB)
30 40 50 60
CO MIX RATIO (PPBv)
0 200
FORMALDEHYDE (PPBv)
1 2 3 4
PEROXIDE (PPB)
0 2
ORGANIC PEROX (PPB)
0.0 0.2 0.4 0.6 0.8 1.0
PRESSURE HEIGHT (METRES)
6000
4000
2000

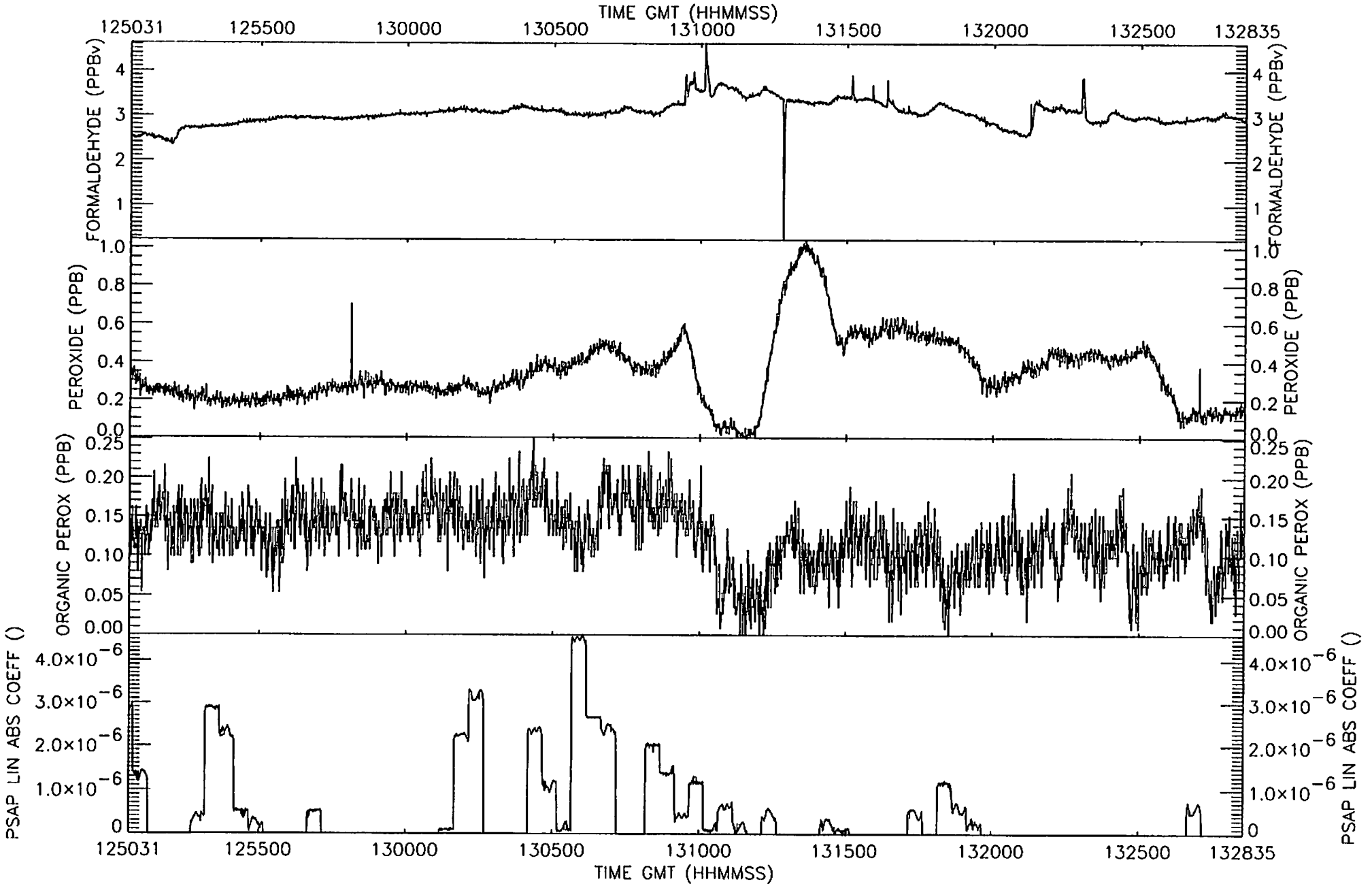

A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 Plotted 22-May-1998 15:34
NO (BITS)
1000 2000 3000 4000
NO2 (BITS)
500 1000 1500 2000 2500
NOy (BITS)
1000 2000 3000 4000
NOy (BITS)
1000 2000 3000 4000
CNC CONCENTRATION (CC-1)
2000
6000
4000
2000
PRESSURE HEIGHT (METRES)
PRESSURE HEIGHT (METRES)
NO (BITS)
NO2 (BITS)
NOy (BITS)
NOy (BITS)
CNC CONCENTRATION (CC-1)

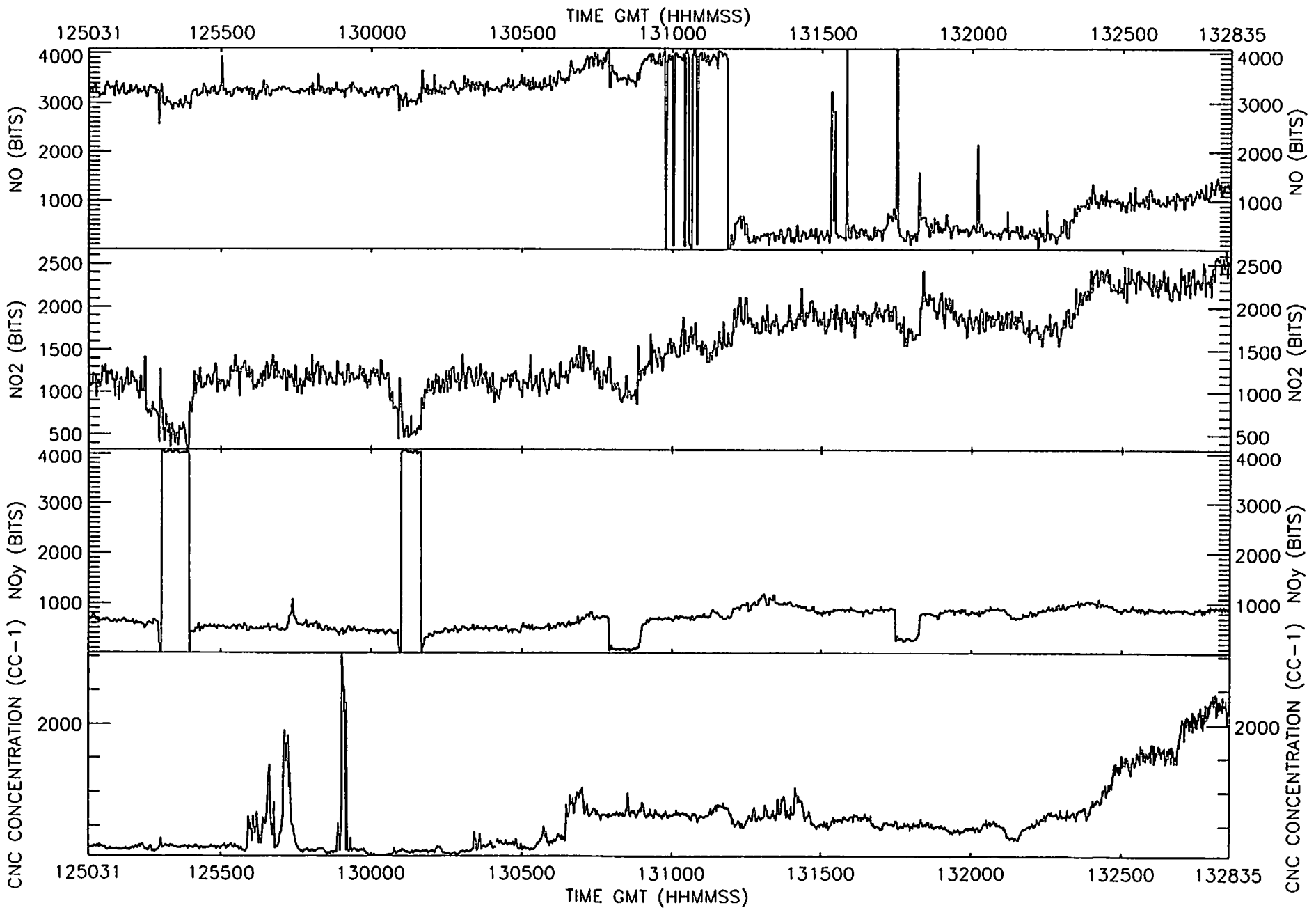
A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 *Plotted 6-May-1998 18:36*




A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 Plotted 6-May-1998 18:36
TIME GMT (HHMMSS)
125031
125500
130000
130500
131000
131500
132000
132500
132835
OZONE MIXING RATIO (PPB)
60
50
40
30
CO MIX RATIO (PPBv)
200
0
1.0
0.5
0.0
-0.5
-1.0
PRESSURE HEIGHT (METRES)
6000
4000
2000
TIME GMT (HHMMSS)

A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 *Plotted 6-May-1998 18:36*




A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 Plotted 6-May-1998 18:36
TIME GMT (HHMMSS)
125031
125500
130000
130500
131000
131500
132000
132500
132835
NO (BITS)
4000
3000
2000
1000
NO2 (BITS)
2500
2000
1500
1000
500
NOy (BITS)
CNC CONCENTRATION (CC-1)

A576 16-SEP-97 P1 50'-FL200 (+bottles) From 125031-132835 *Plotted 6-May-1998 18:36*

STATIC PRESSURE (MB)
No of obs 2285
Mean 711.477
Standard dev 170.322
Max value 1013.23
Min value 467.489

DEICED TRUE TEMP (DEG K)
No of obs 2285
Mean 279.947
Standard dev 10.3697
Max value 296.335
Min value 263.464

DEW POINT (DEG K)
No of obs 2285
Mean 270.132
Standard dev 17.5300
Max value 294.305
Min value 240.573

OZONE MIXING RATIO (PPB)
No of obs 2285
Mean 43.6666
Standard dev 13.1646
Max value 64.8044
Min value 23.9724

PSAP LIN ABS COEFF ()
No of obs 2285
Mean 4.889831e-07
Standard dev 9.320399e-07
Max value 4.602625e-06
Min value -1.046657e-09

No good data

PRESSURE HEIGHT (METRES)
No of obs 2285
Mean 3067.85
Standard dev 1892.63
Max value 6066.94
Min value 0.183724

CORRECTED LATITUDE (DEGREES)
No of obs 2285
Mean 34.5118
Standard dev 0.536000
Max value 35.2357
Min value 33.4093

CORRECTED LONGITUDE (DEGREES)
No of obs 2285
Mean -27.3714
Standard dev 0.230086
Max value -26.7973
Min value -27.5626

NORTHWARD WIND COMPT (M S-1)
No of obs 2285
Mean -2.57797
Standard dev 1.26313
Max value -9.354401e-02
Min value -7.57174

EASTWARD WIND COMPT (M S-1)
No of obs 2285
Mean 9.88787
Standard dev 1.17438
Max value 12.6608
Min value 6.14990

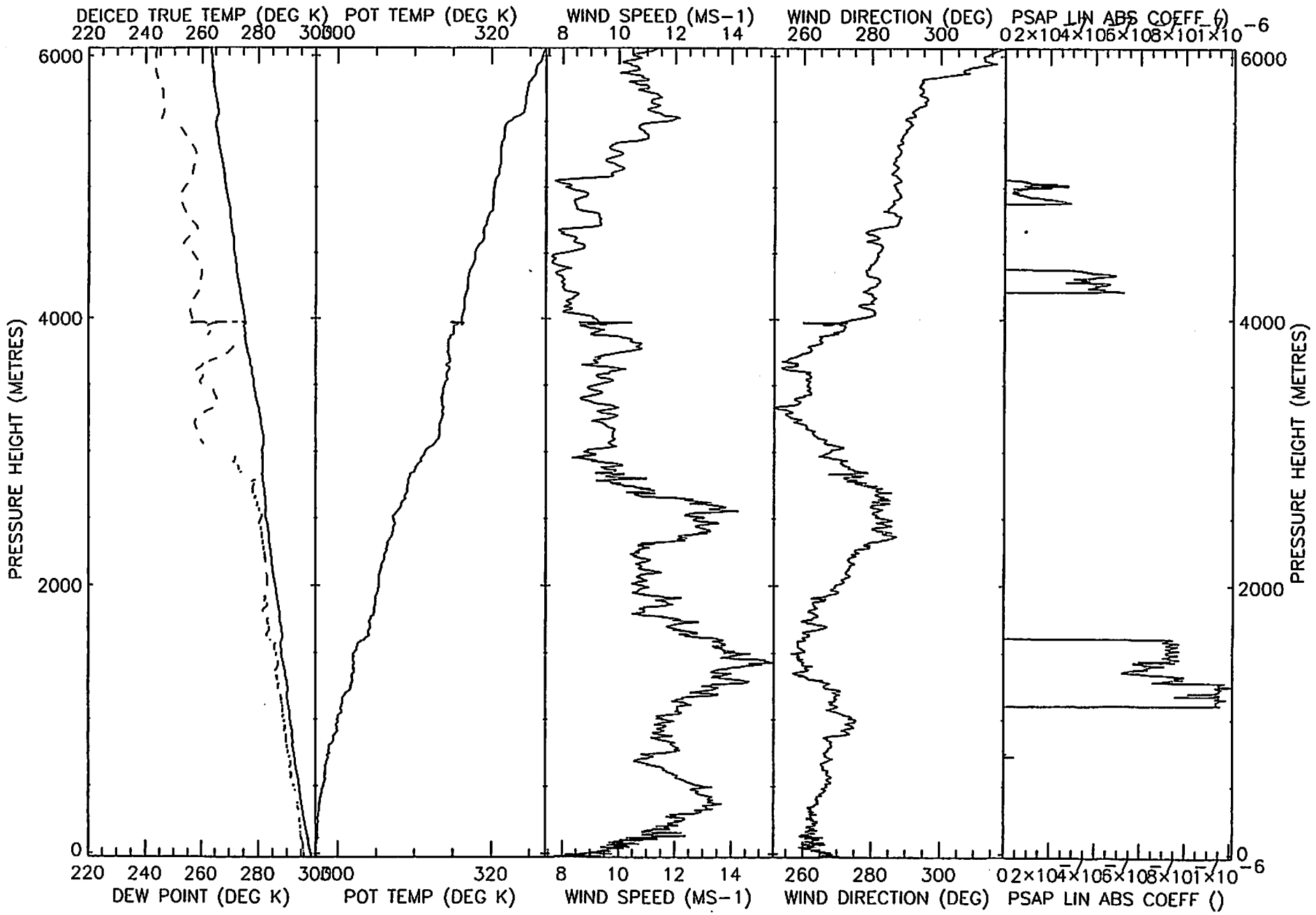
VERTICAL WIND COMPT (M S-1)
No of obs 2285
Mean -0.912343
Standard dev 0.562684
Max value 1.83977
Min value -2.22289

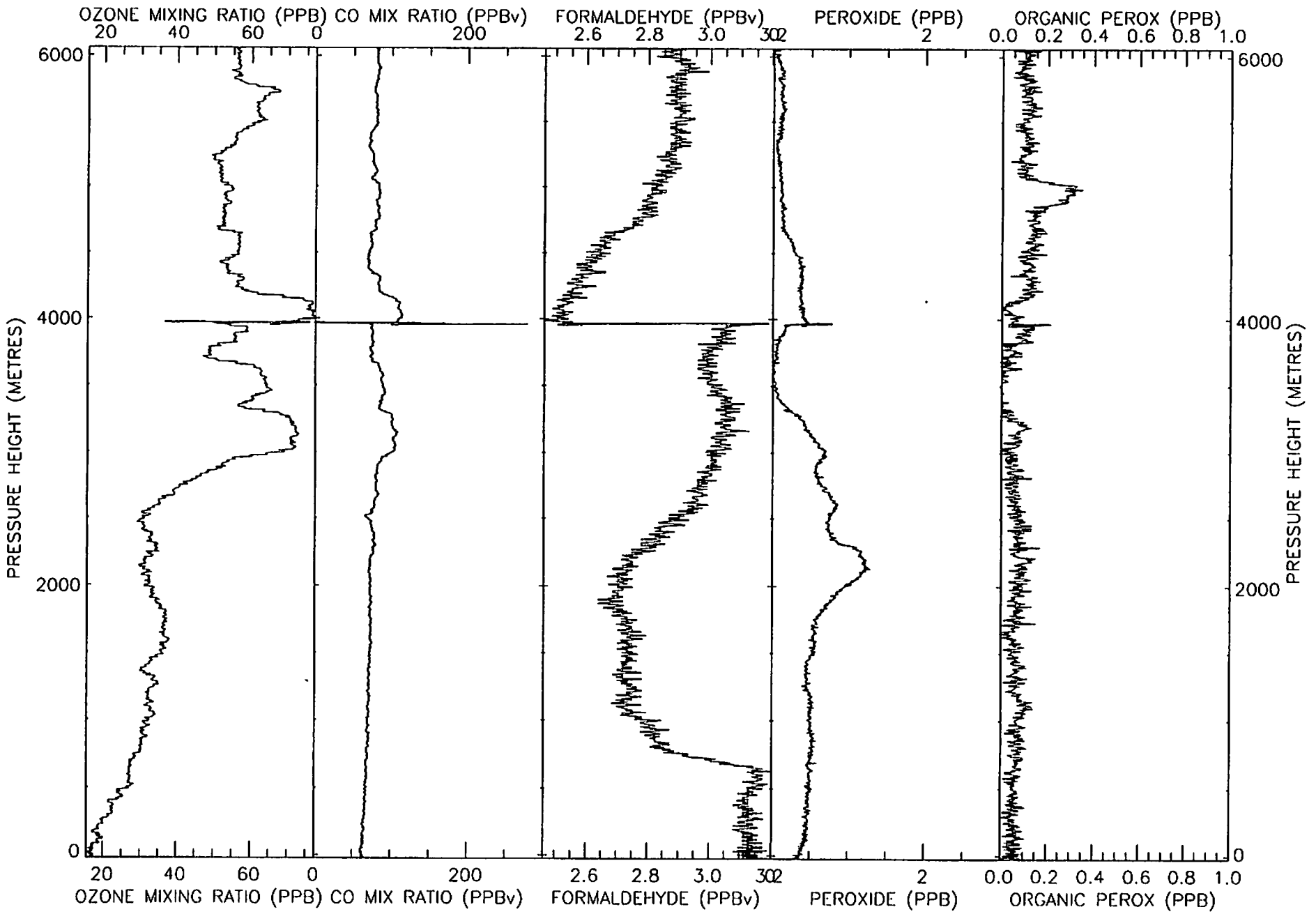
WIND SPEED (MS-1)
No of obs 2285
Mean 10.3078
Standard dev 1.06686
Max value 12.9928
Min value 6.24936

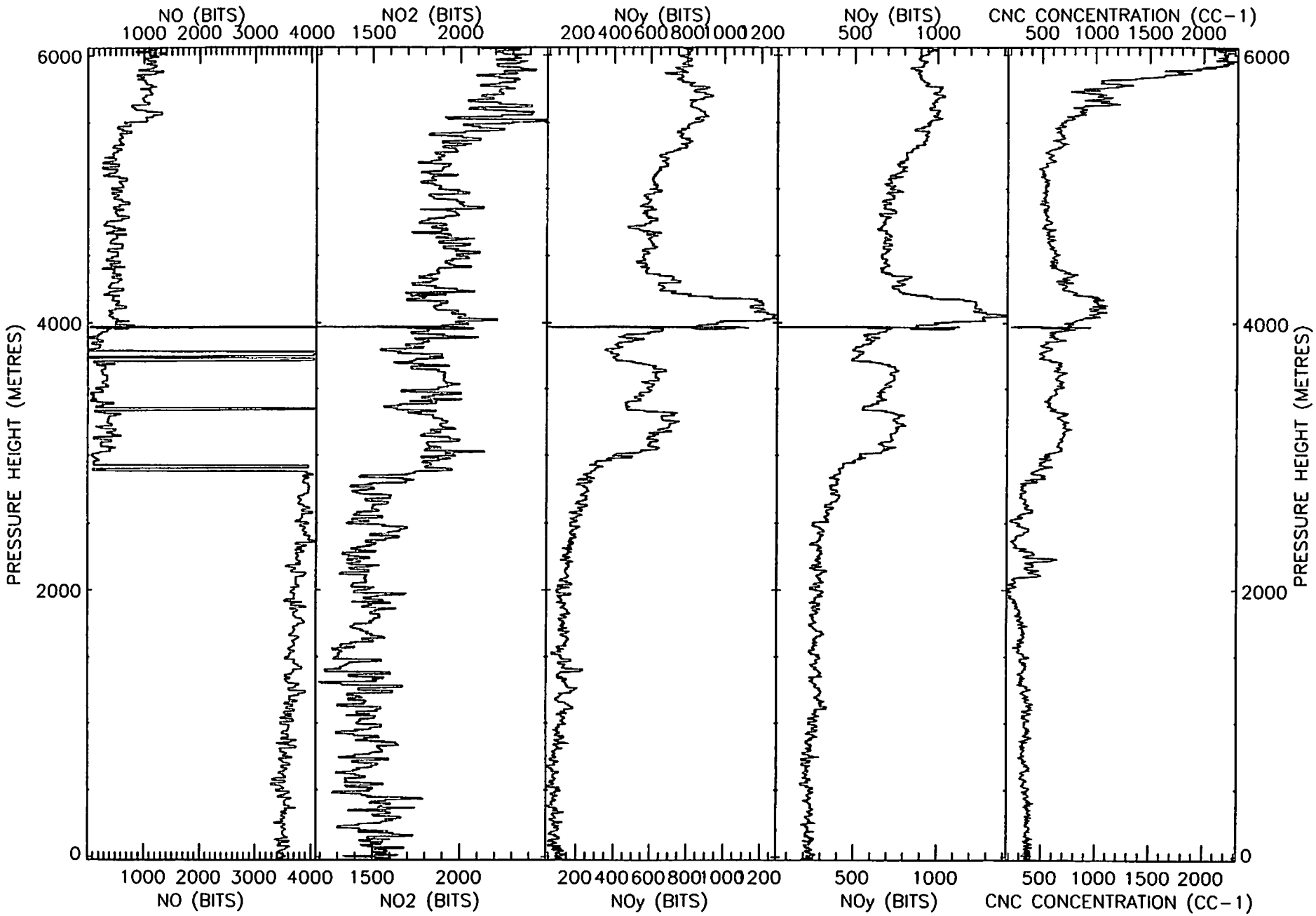
WIND DIRECTION (DEG)
Mean 284.613

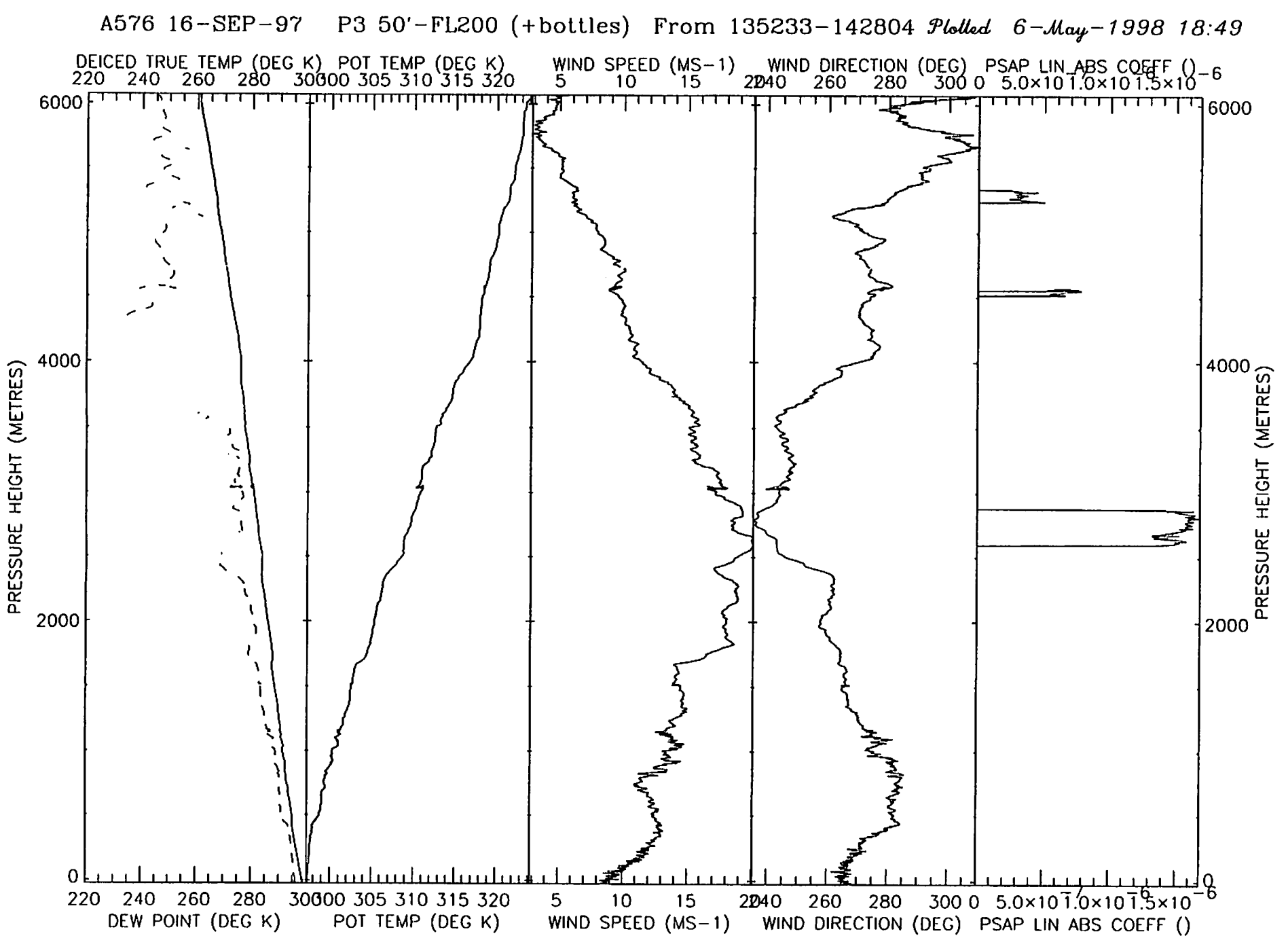
TRUE AIR SPEED (M S-1)
No of obs 2285
Mean 109.574
Standard dev 9.89126
Max value 125.834
Min value 93.4743

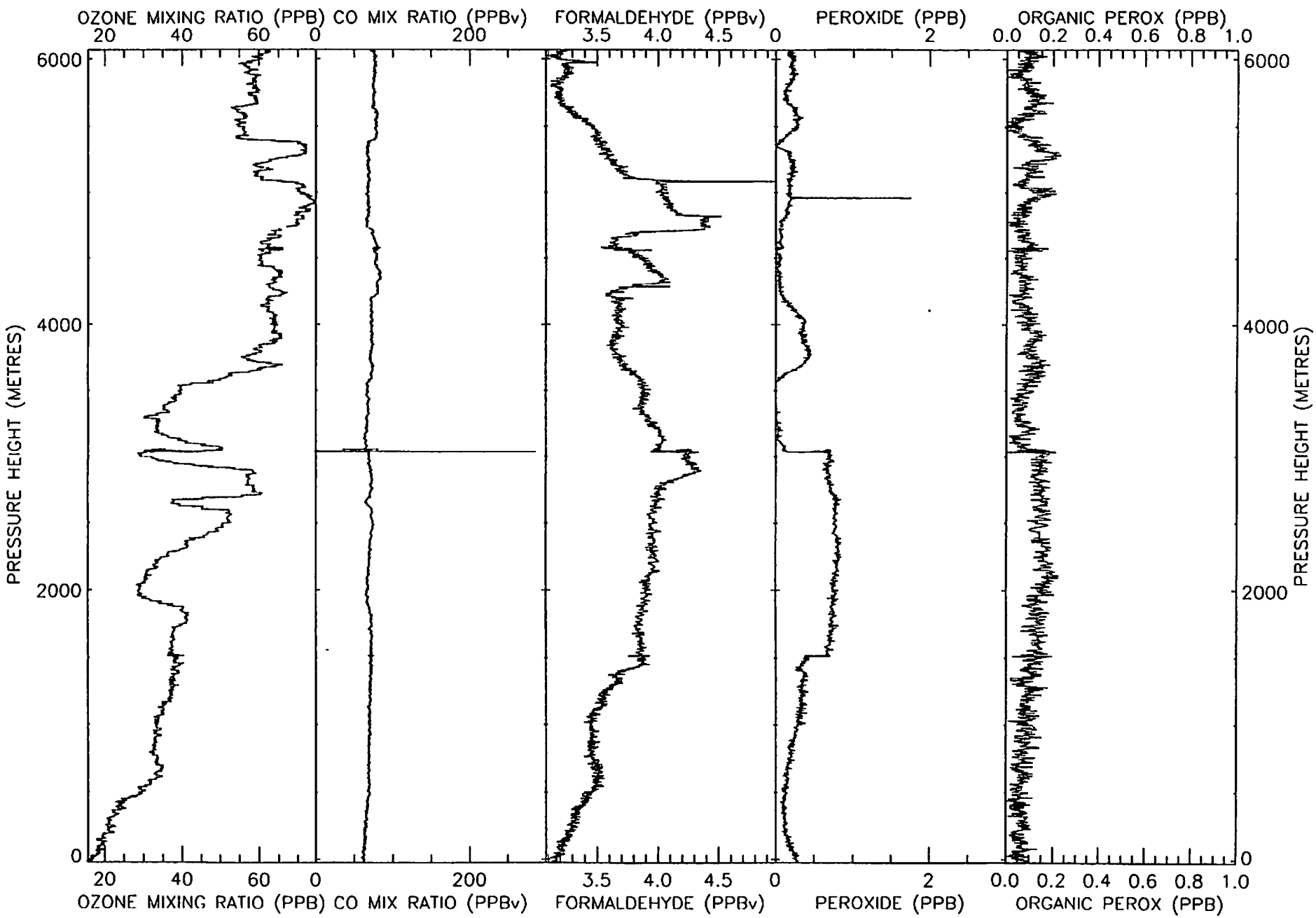
HEADING (DEG)
Mean 197.538


A576 16-SEP-97 P2 FL200-50' From 133010-135233 Plotted 6-May-1998 18:41
DEICED TRUE TEMP (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()
220 240 260 280 300
300 320
8 10 12 14
260 280 300
0 2×10⁻⁶ 4×10⁻⁶ 6×10⁻⁶ 8×10⁻⁶ 1×10⁻⁵
6000
4000
2000
0
PRESSURE HEIGHT (METRES)
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

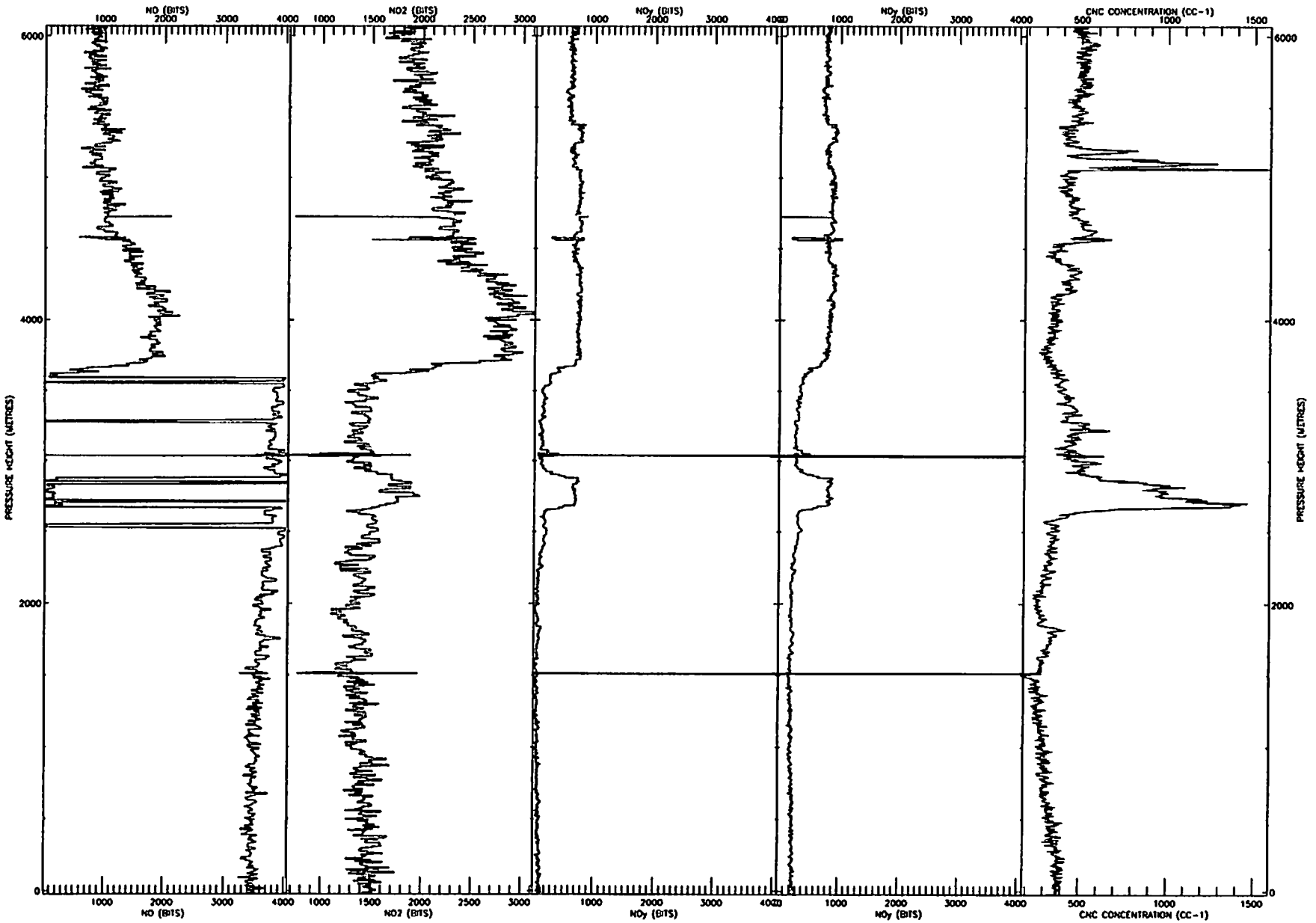

A576 16-SEP-97 P2 FL200-50' From 133010-135233 Plotted 6-May-1998 18:42
OZONE MIXING RATIO (PPB)
20 40 60
CO MIX RATIO (PPBv)
0 200
FORMALDEHYDE (PPBv)
2.6 2.8 3.0 3.2
PEROXIDE (PPB)
2
ORGANIC PEROX (PPB)
0.0 0.2 0.4 0.6 0.8 1.0
PRESSURE HEIGHT (METRES)
6000
4000
2000
0

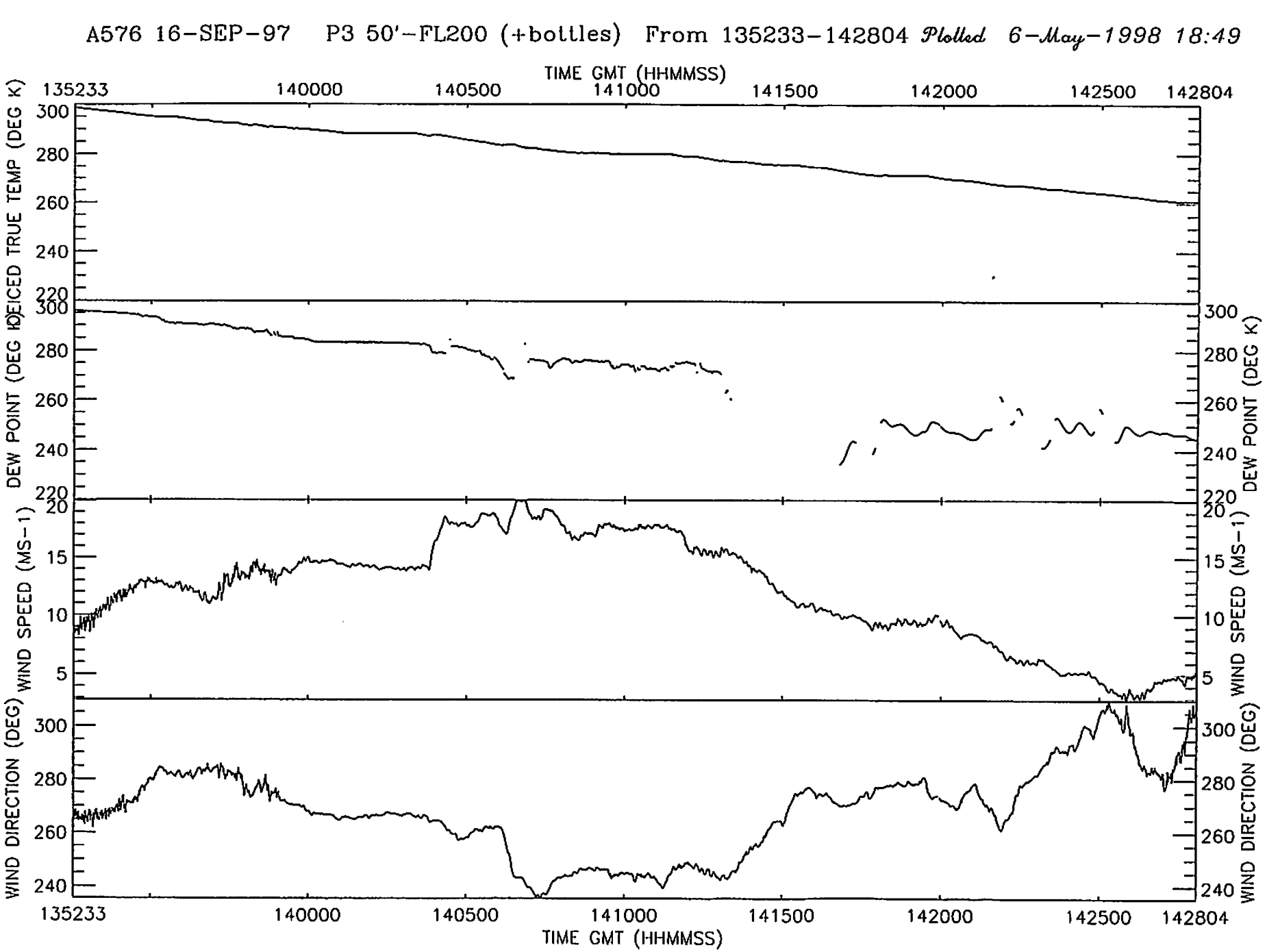

A576 16-SEP-97 P2 FL200-50' From 133010-135233 Plotted 22-May-1998 15:19
NO (BITS)
1000 2000 3000 4000
NO2 (BITS)
1500 2000
NOy (BITS)
200 400 600 800 1000 200
NOy (BITS)
500 1000
CNC CONCENTRATION (CC-1)
500 1000 1500 2000
PRESSURE HEIGHT (METRES)
6000
4000
2000
0
1000 2000 3000 4000
NO (BITS)
1500 2000
NO2 (BITS)
200 400 600 800 1000 200
NOy (BITS)
500 1000
NOy (BITS)
500 1000 1500 2000
CNC CONCENTRATION (CC-1)


A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 Plotted 6-May-1998 18:49
DEICED TRUE TEMP (DEG K)
220 240 260 280 300
POT TEMP (DEG K)
300 305 310 315 320
WIND SPEED (MS-1)
5 10 15 20
WIND DIRECTION (DEG)
0 40 260 280 300
PSAP LIN ABS COEFF ()
0 5.0×10-6 1.0×10-6 1.5×10-6
PRESSURE HEIGHT (METRES)
6000
4000
2000
0
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

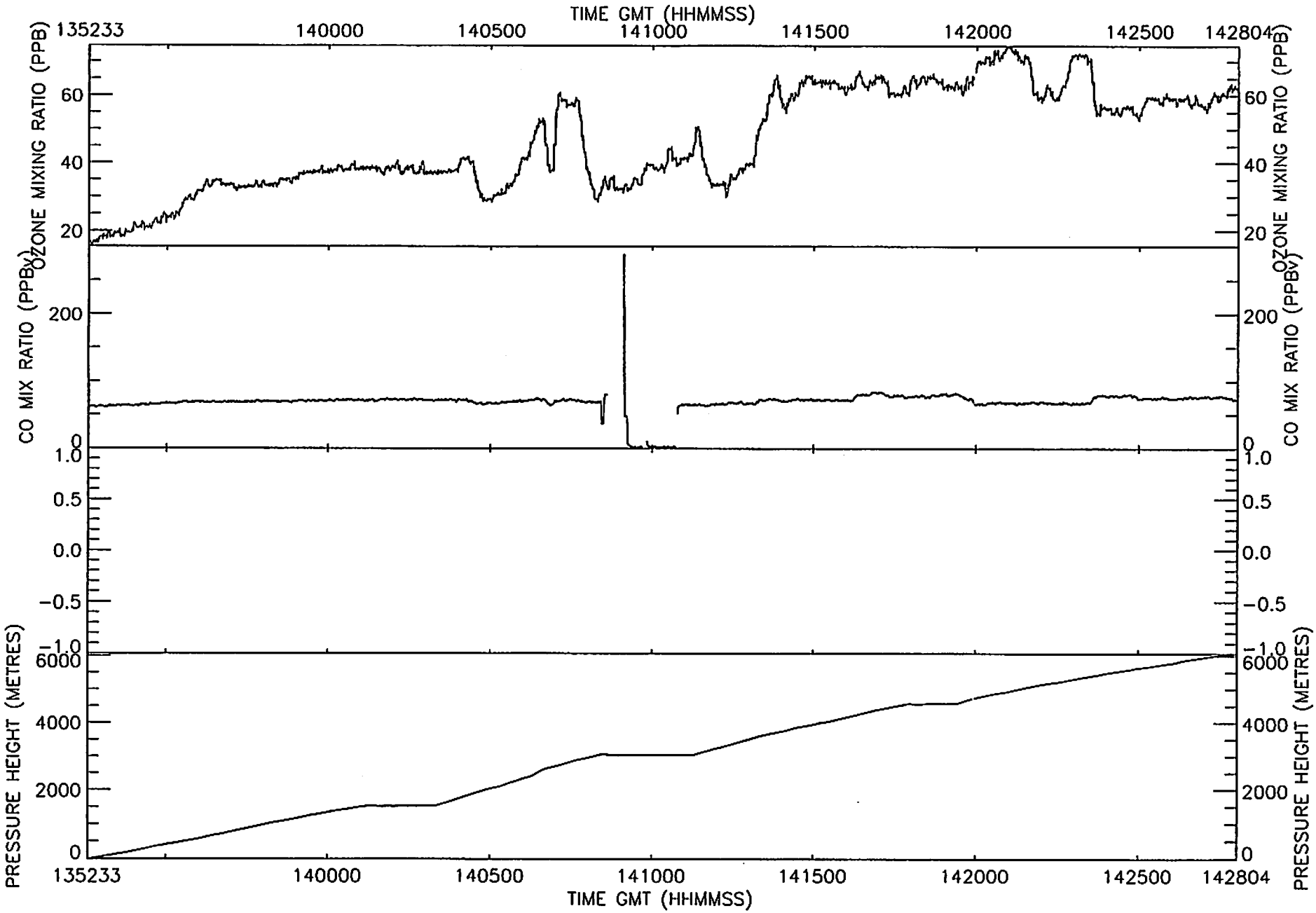

A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 Plotted 6-May-1998 18:49
OZONE MIXING RATIO (PPB)
CO MIX RATIO (PPBv)
FORMALDEHYDE (PPBv)
PEROXIDE (PPB)
ORGANIC PEROX (PPB)
PRESSURE HEIGHT (METRES)
0
2000
4000
6000
20
40
60
200
3.5
4.0
4.5
2
0.0
0.2
0.4
0.6
0.8
1.0

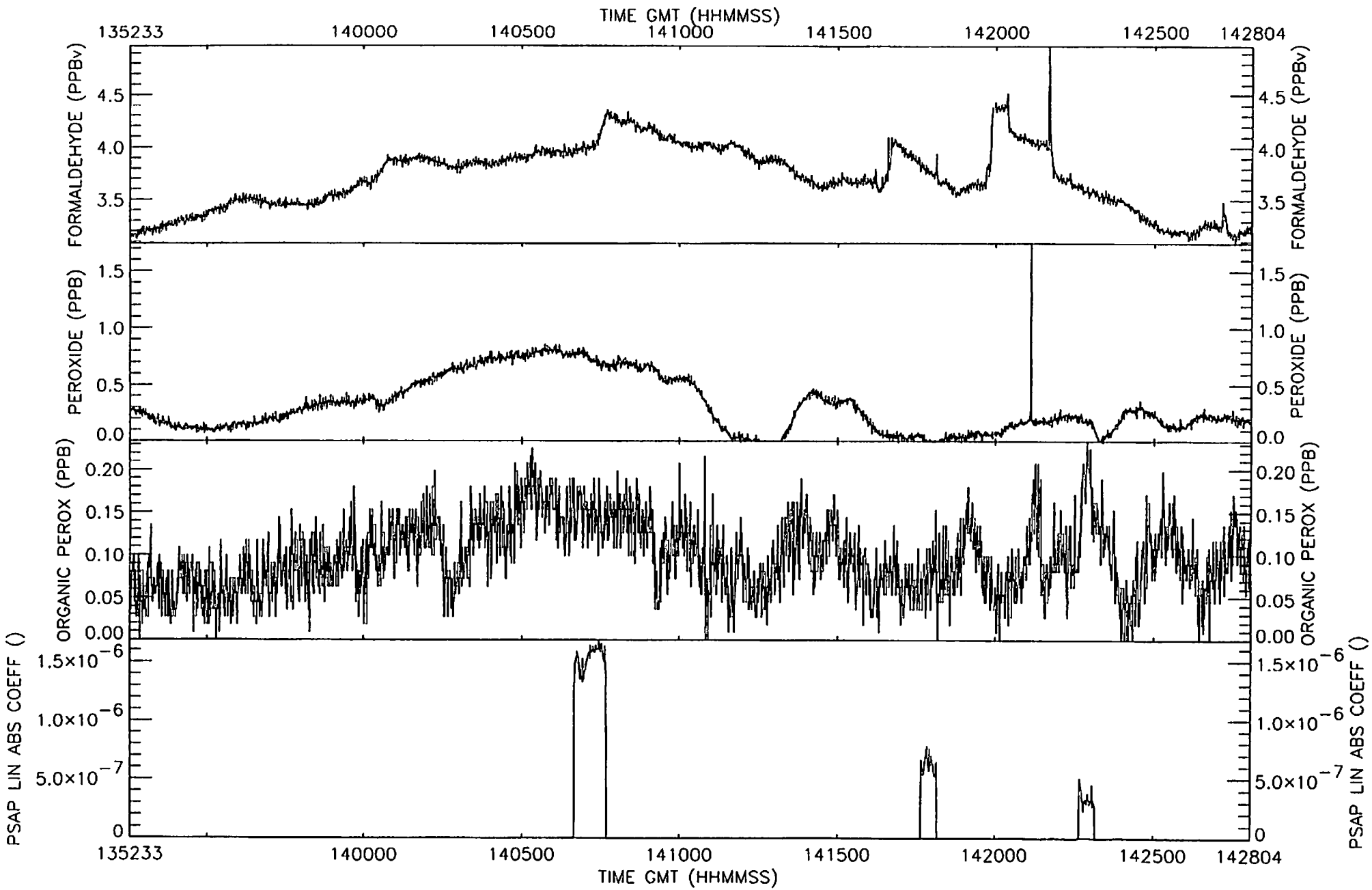
A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 *Plotted 22-May-1998 15:48*

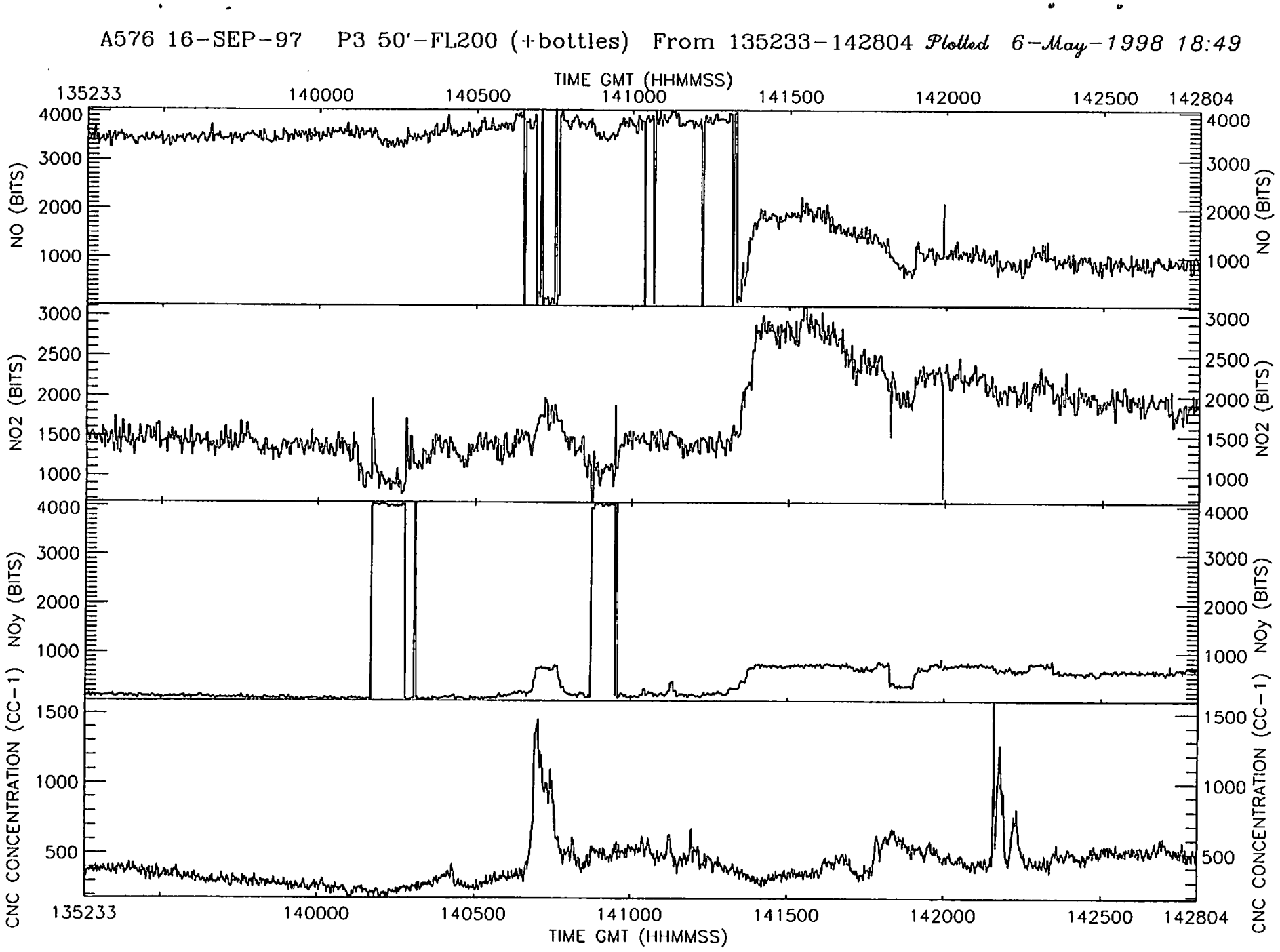



A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 Plotted 6-May-1998 18:49
TIME GMT (HHMMSS)
135233
140000
140500
141000
141500
142000
142500
142804
DEW POINT (DEG K)DEICED TRUE TEMP (DEG K)
DEW POINT (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
300
280
260
240
220
20
15
10
5

A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 *Plotted 6-May-1998 18:49*




A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 Plotted 6-May-1998 18:49
TIME GMT (HHMMSS)
135233
140000
140500
141000
141500
142000
142500
142804
FORMALDEHYDE (PPBv)
4.5
4.0
3.5
PEROXIDE (PPB)
1.5
1.0
0.5
0.0
ORGANIC PEROX (PPB)
0.20
0.15
0.10
0.05
0.00
PSAP LIN ABS COEFF ()
1.5×10⁻⁶
1.0×10⁻⁶
5.0×10⁻⁷
0


A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 Plotted 6-May-1998 18:49
TIME GMT (HHMMSS)
135233
140000
140500
141000
141500
142000
142500
142804
NO (BITS)
4000
3000
2000
1000
NO2 (BITS)
3000
2500
2000
1500
1000
NOy (BITS)
4000
3000
2000
1000
CNC CONCENTRATION (CC-1)
1500
1000
500

A576 16-SEP-97 P3 50'-FL200 (+bottles) From 135233-142804 *Plotted 6-May-1998 18:49*

STATIC PRESSURE (MB)
No of obs 2130
Mean 709.258
Standard dev 161.380
Max value 1016.02
Min value 467.351

DEICED TRUE TEMP (DEG K)
No of obs 2130
Mean 279.768
Standard dev 10.5613
Max value 298.626
Min value 260.889

DEW POINT (DEG K)
No of obs 2130
Mean 267.171
Standard dev 19.4404
Max value 296.057
Min value 232.894

OZONE MIXING RATIO (PPB)
No of obs 2130
Mean 46.6050
Standard dev 15.1447
Max value 74.6110
Min value 15.5810

PSAP LIN ABS COEFF ()
No of obs 2130
Mean 5.555021e-08
Standard dev 2.647300e-07
Max value 1.684117e-06
Min value -1.046657e-09

No good data

PRESSURE HEIGHT (METRES)
No of obs 2130
Mean 3075.08
Standard dev 1801.51
Max value 6069.09
Min value -23.0385

CORRECTED LATITUDE (DEGREES)
No of obs 2130
Mean 31.0488
Standard dev 0.557089
Max value 31.9542
Min value 30.0104

CORRECTED LONGITUDE (DEGREES)
No of obs 2130
Mean -27.7201
Standard dev 0.182945
Max value -27.3795
Min value -28.0306

NORTHWARD WIND COMPT (M S-1)
No of obs 2130
Mean 1.32579
Standard dev 3.60431
Max value 10.5952
Min value -3.39765

EASTWARD WIND COMPT (M S-1)
No of obs 2130
Mean 11.6753
Standard dev 4.17686
Max value 18.7348
Min value 2.30379

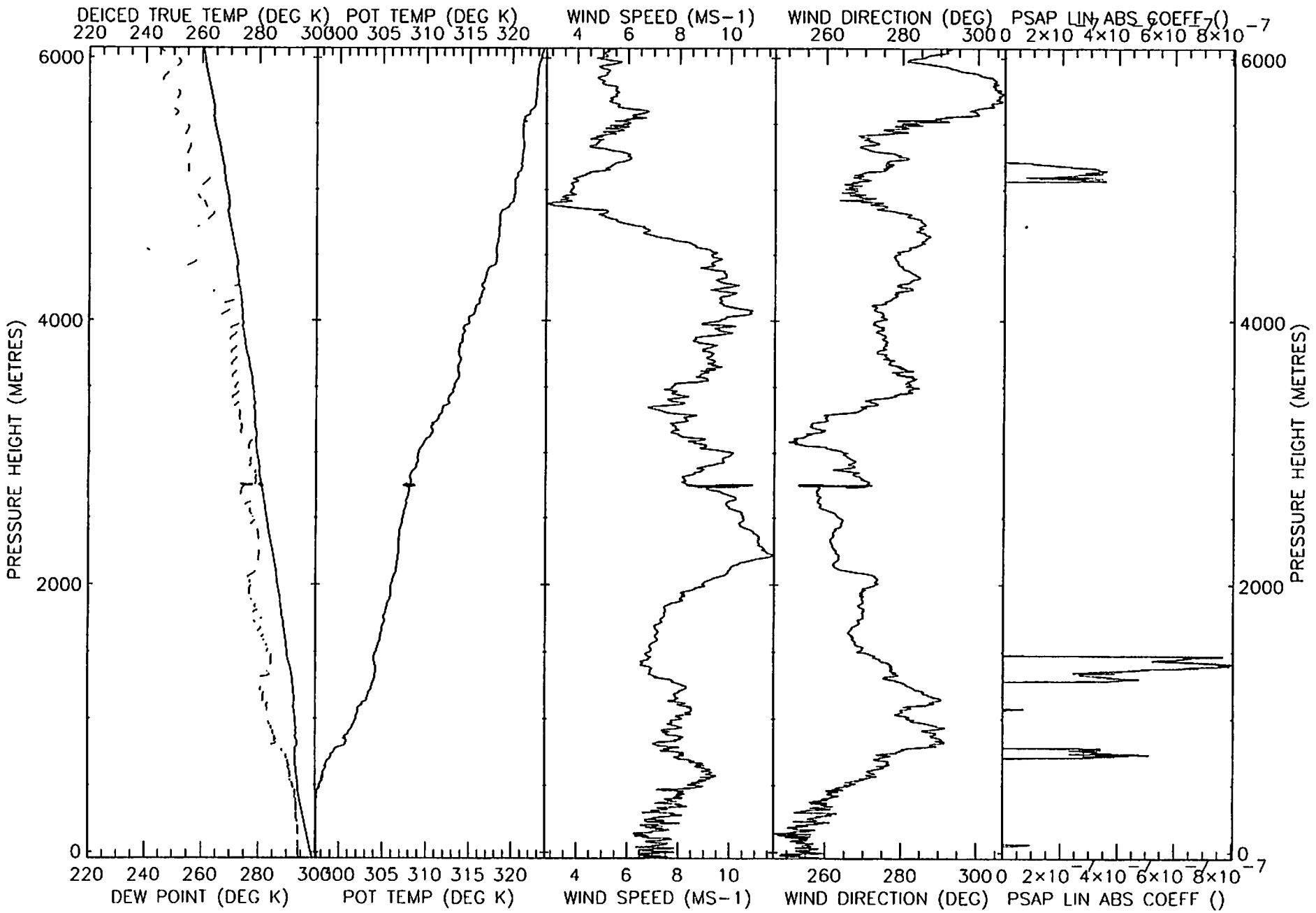
VERTICAL WIND COMPT (M S-1)
No of obs 2130
Mean -0.907850
Standard dev 0.522045
Max value 1.32642
Min value -2.30174

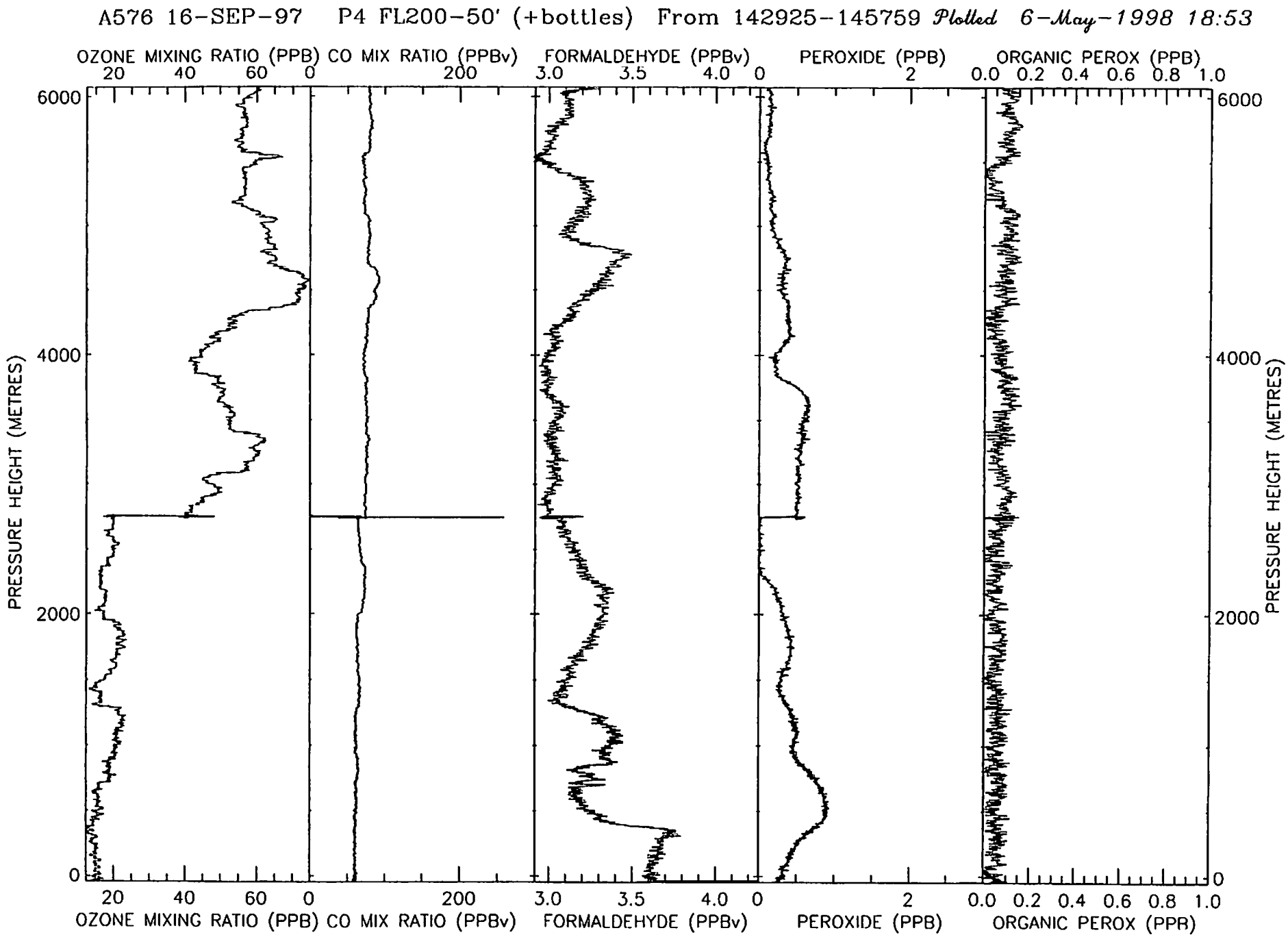
WIND SPEED (MS-1)
No of obs 2129
Mean 12.1762
Standard dev 4.50306
Max value 20.0659
Min value 2.82821

WIND DIRECTION (DEG)
Mean 263.522

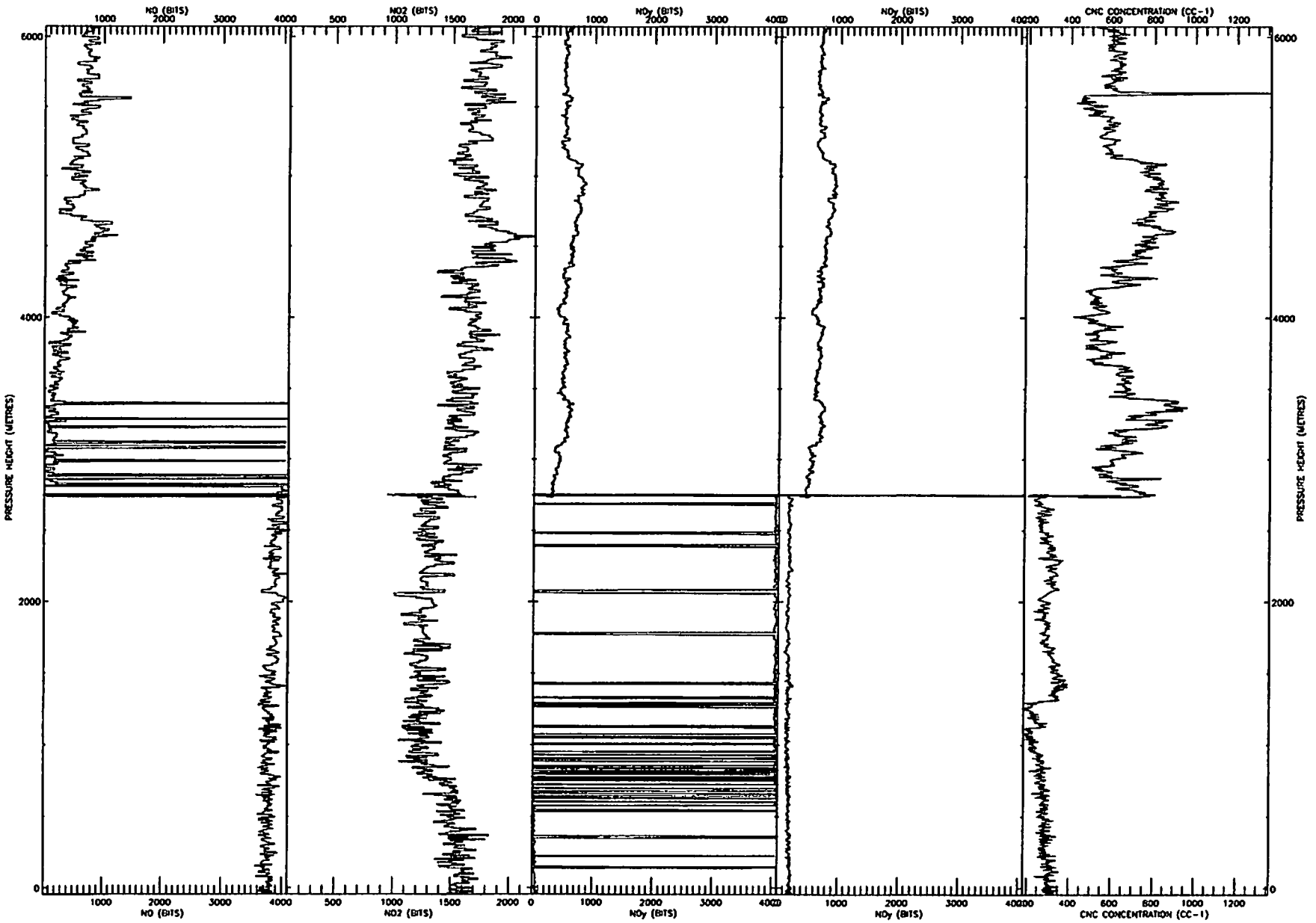
TRUE AIR SPEED (M S-1)
No of obs 2130
Mean 110.594
Standard dev 9.16113
Max value 127.040
Min value 91.6126

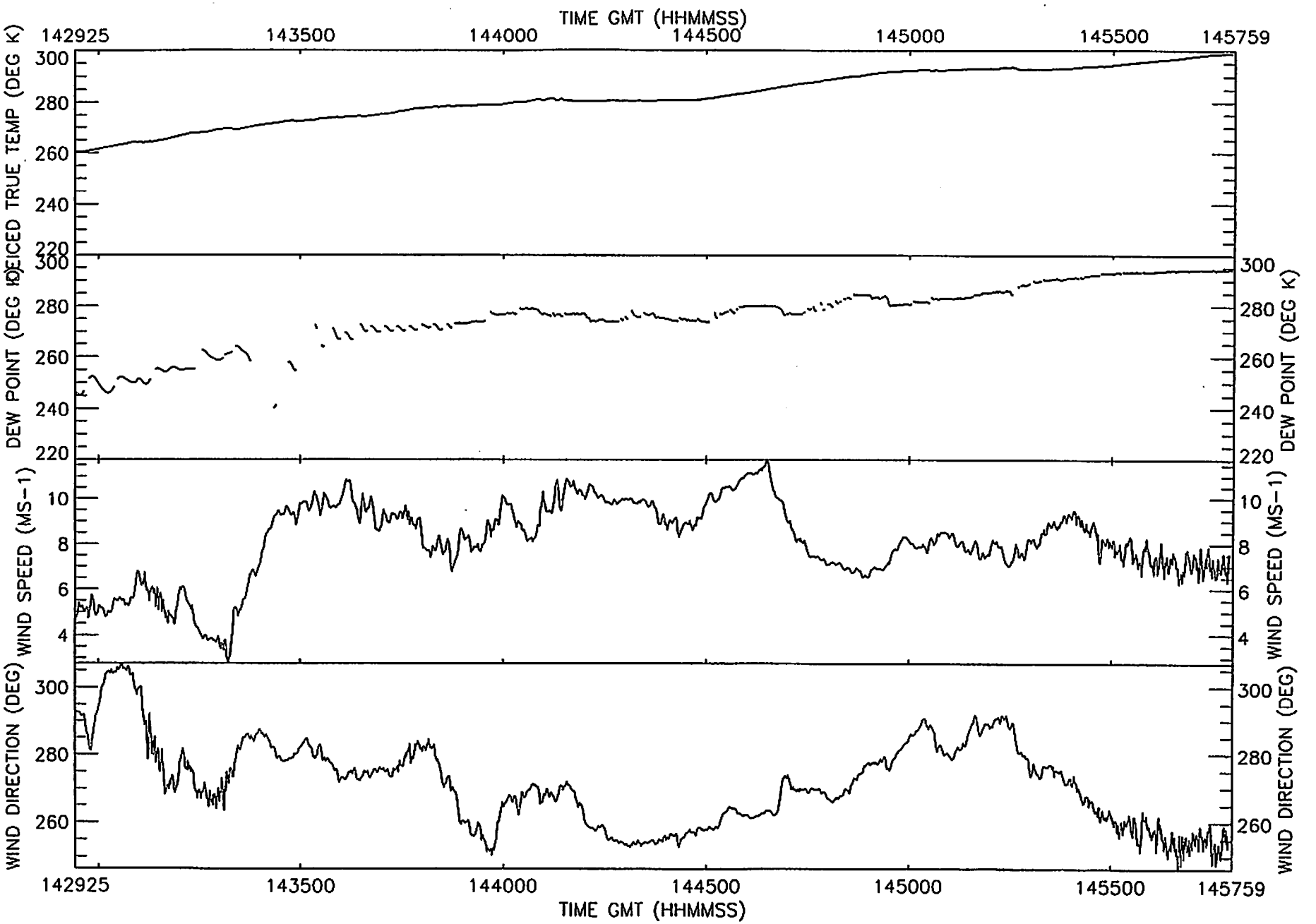
HEADING (DEG)
Mean 196.072


A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 Plotted 6-May-1998 18:53
DEICED TRUE TEMP (DEG K)
220 240 260 280 300
POT TEMP (DEG K)
300 305 310 315 320
WIND SPEED (MS-1)
4 6 8 10
WIND DIRECTION (DEG)
260 280 300
PSAP LIN ABS COEFF ()
0 2×10⁻⁷ 4×10⁻⁷ 6×10⁻⁷ 8×10⁻⁷
PRESSURE HEIGHT (METRES)
6000
4000
2000
0
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

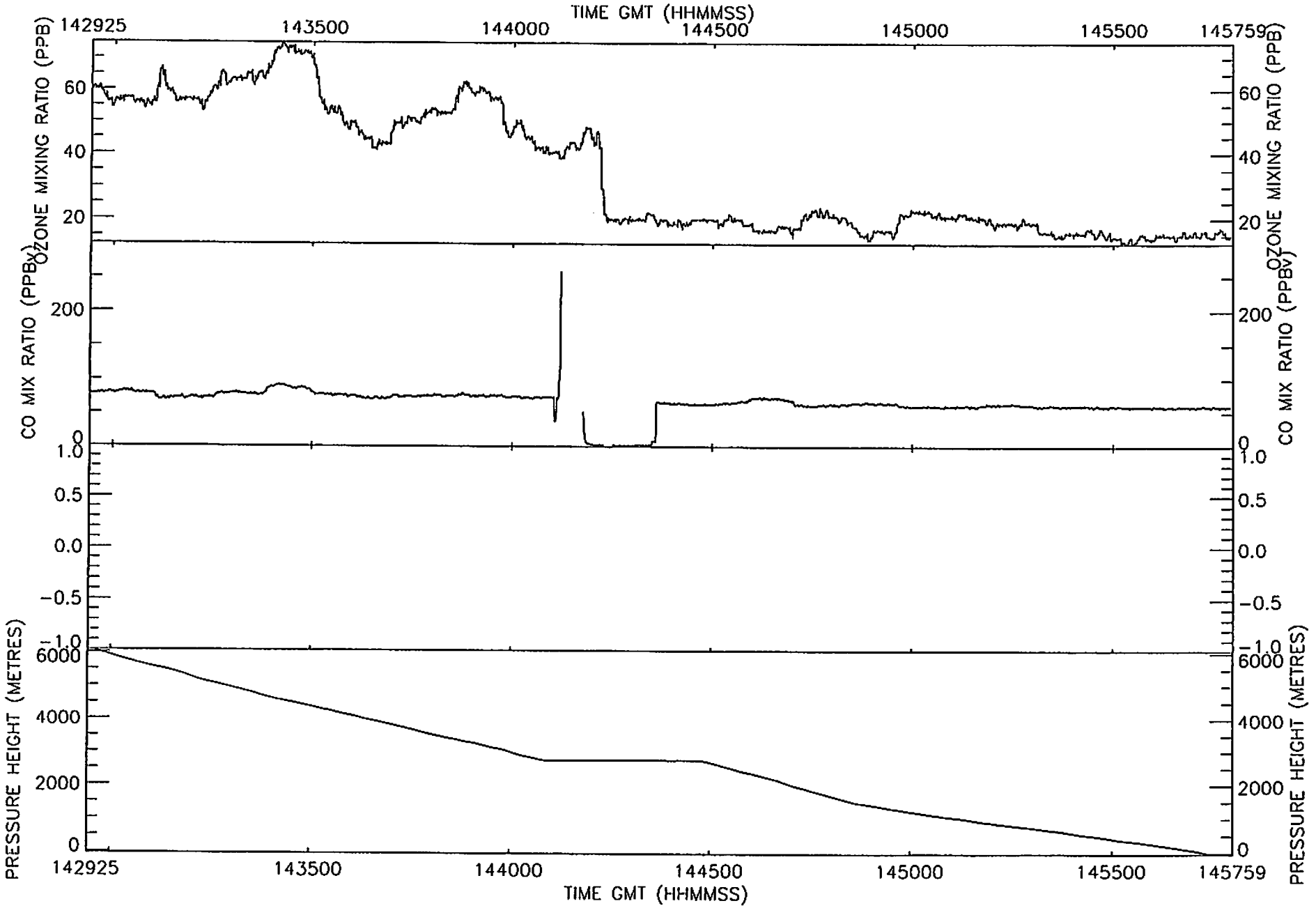

A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 Plotted 6-May-1998 18:53
OZONE MIXING RATIO (PPB)
CO MIX RATIO (PPBv)
FORMALDEHYDE (PPBv)
PEROXIDE (PPB)
ORGANIC PEROX (PPB)
PRESSURE HEIGHT (METRES)
0
2000
4000
6000
20
40
60
200
3.0
3.5
4.0
2
0.0
0.2
0.4
0.6
0.8
1.0

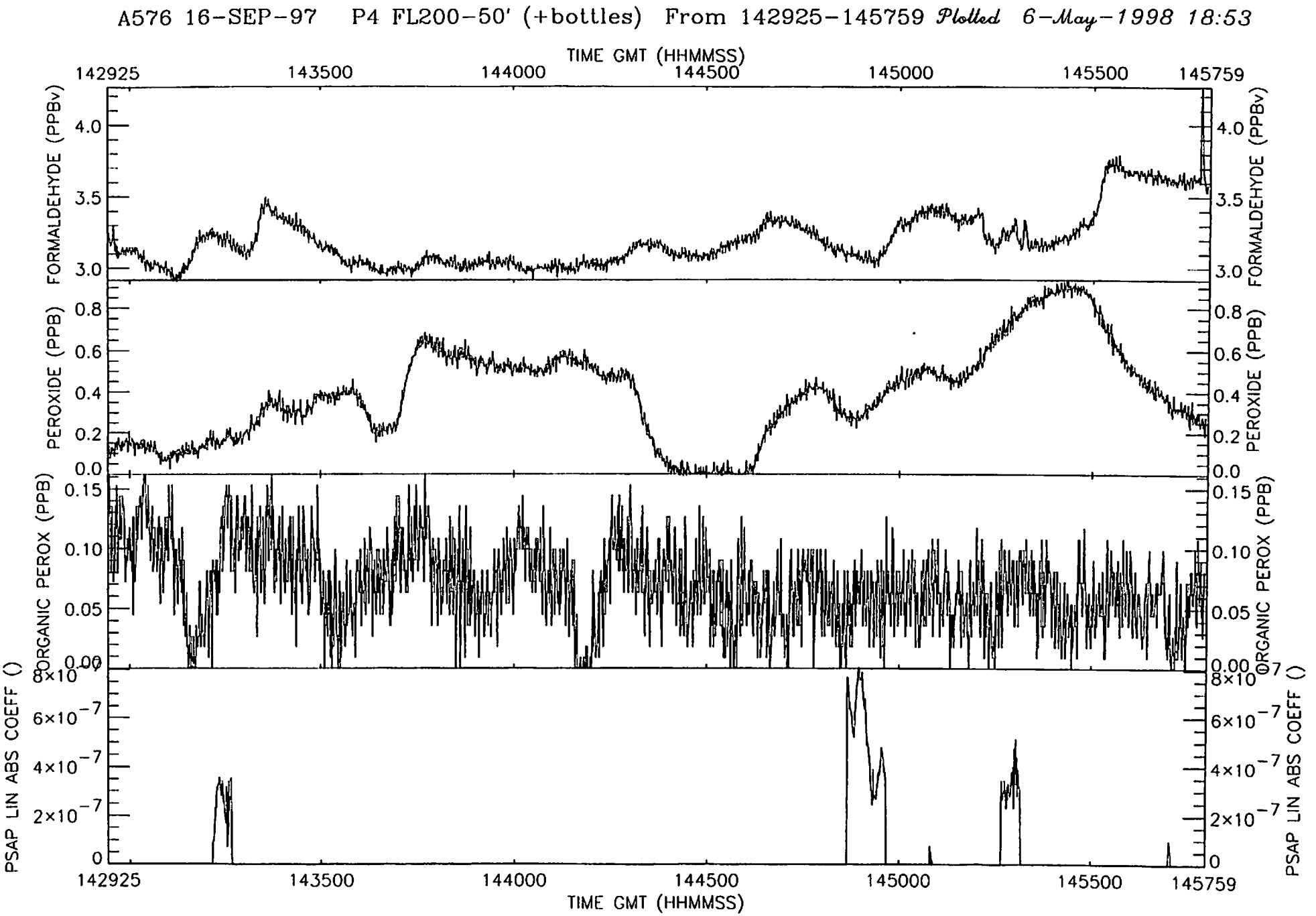
A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 *Plotted 22-May-1998 15:52*



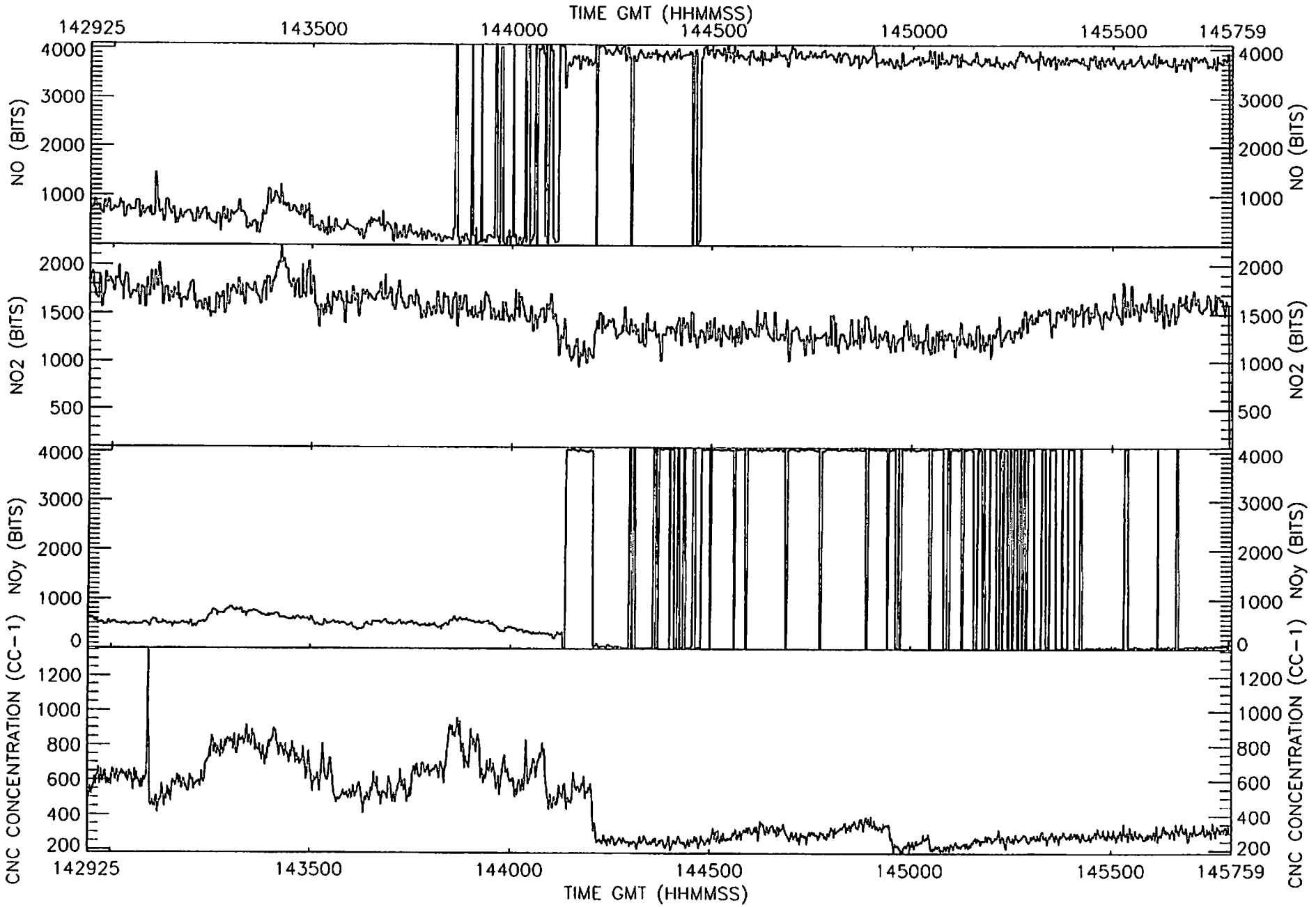

A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 Plotted 6-May-1998 18:53
TIME GMT (HHMMSS)
142925
143500
144000
144500
145000
145500
145759
DEICED TRUE TEMP (DEG K)
DEW POINT (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
300
280
260
240
220
10
8
6
4

A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 *Plotted 6-May-1998 18:53*




A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 Plotted 6-May-1998 18:53
TIME GMT (HHMMSS)
142925
143500
144000
144500
145000
145500
145759
FORMALDEHYDE (PPBv)
4.0
3.5
3.0
PEROXIDE (PPB)
0.8
0.6
0.4
0.2
0.0
ORGANIC PEROX (PPB)
0.15
0.10
0.05
0.00
PSAP LIN ABS COEFF ()
8×10⁻⁷
6×10⁻⁷
4×10⁻⁷
2×10⁻⁷
0

A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 *Plotted 6-May-1998 18:53*



A576 16-SEP-97 P4 FL200-50' (+bottles) From 142925-145759 *Plotted 6-May-1998 18:53*

STATIC PRESSURE (MB)
No of obs 1712
Mean 747.226
Standard dev 157.104
Max value 1018.61
Min value 467.092

DEICED TRUE TEMP (DEG K)
No of obs 1712
Mean 282.181
Standard dev 10.3438
Max value 298.984
Min value 260.450

DEW POINT (DEG K)
No of obs 1712
Mean 275.201
Standard dev 13.1336
Max value 294.651
Min value 240.364

OZONE MIXING RATIO (PPB)
No of obs 1712
Mean 34.6235
Standard dev 19.3446
Max value 74.7802
Min value 12.4668

PSAP LIN ABS COEFF ()
No of obs 1712
Mean 2.792734e-08
Standard dev 1.151844e-07
Max value 8.049012e-07
Min value -1.046657e-09

No good data

PRESSURE HEIGHT (METRES)
No of obs 1712
Mean 2643.22
Standard dev 1713.95
Max value 6073.13
Min value -44.5244

CORRECTED LATITUDE (DEGREES)
No of obs 1712
Mean 29.0335
Standard dev 0.475699
Max value 29.9135
Min value 28.2525

CORRECTED LONGITUDE (DEGREES)
No of obs 1712
Mean -28.1195
Standard dev 5.586427e-02
Max value -28.0416
Min value -28.2437

NORTHWARD WIND COMPT (M S-1)
No of obs 1712
Mean -7.331852e-02
Standard dev 1.62798
Max value 2.97029
Min value -3.34102

EASTWARD WIND COMPT (M S-1)
No of obs 1712
Mean 7.90770
Standard dev 1.77702
Max value 11.6613
Min value 2.76270

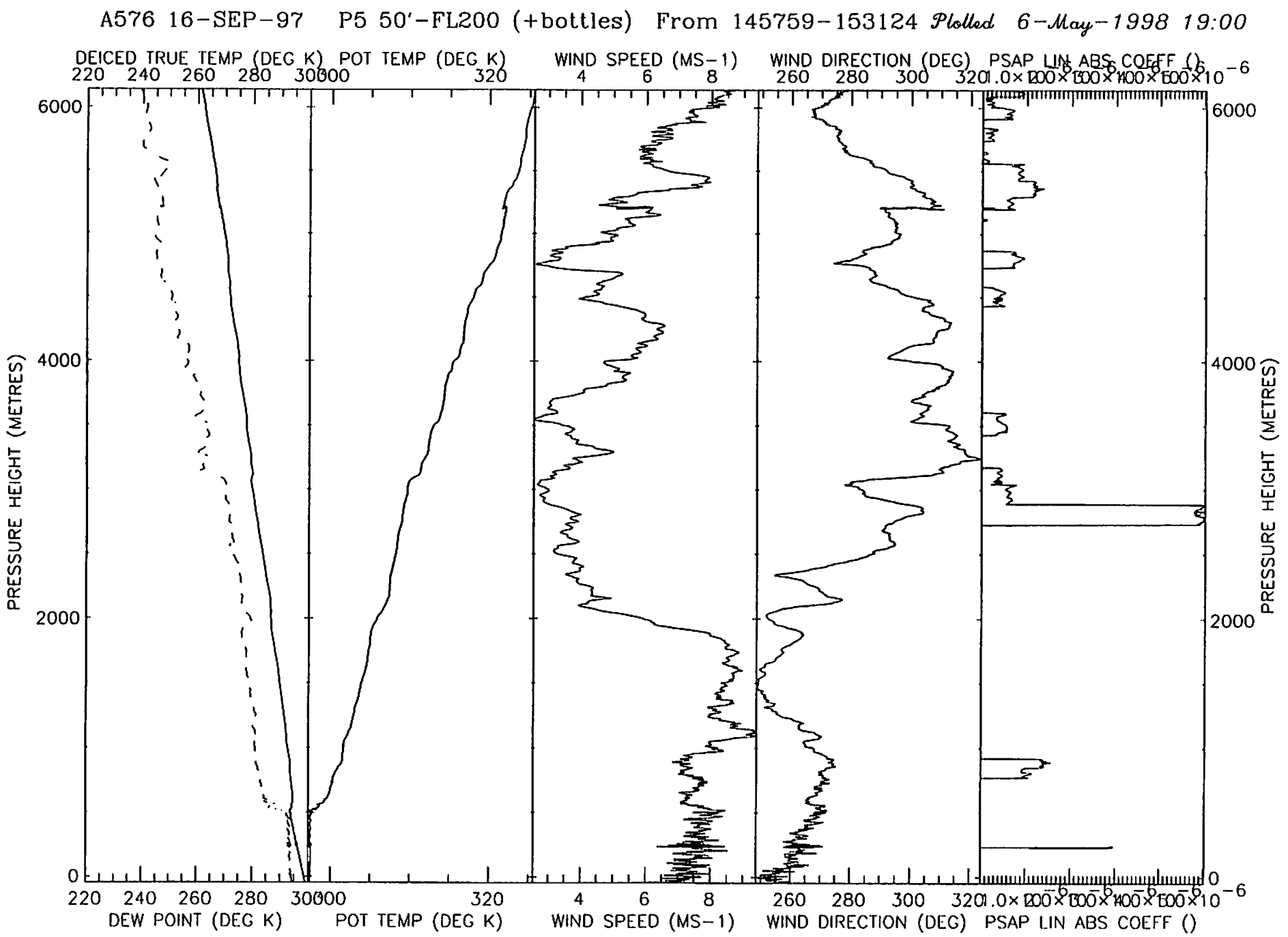
VERTICAL WIND COMPT (M S-1)
No of obs 1712
Mean 0.197222
Standard dev 0.483588
Max value 1.46394
Min value -1.16811

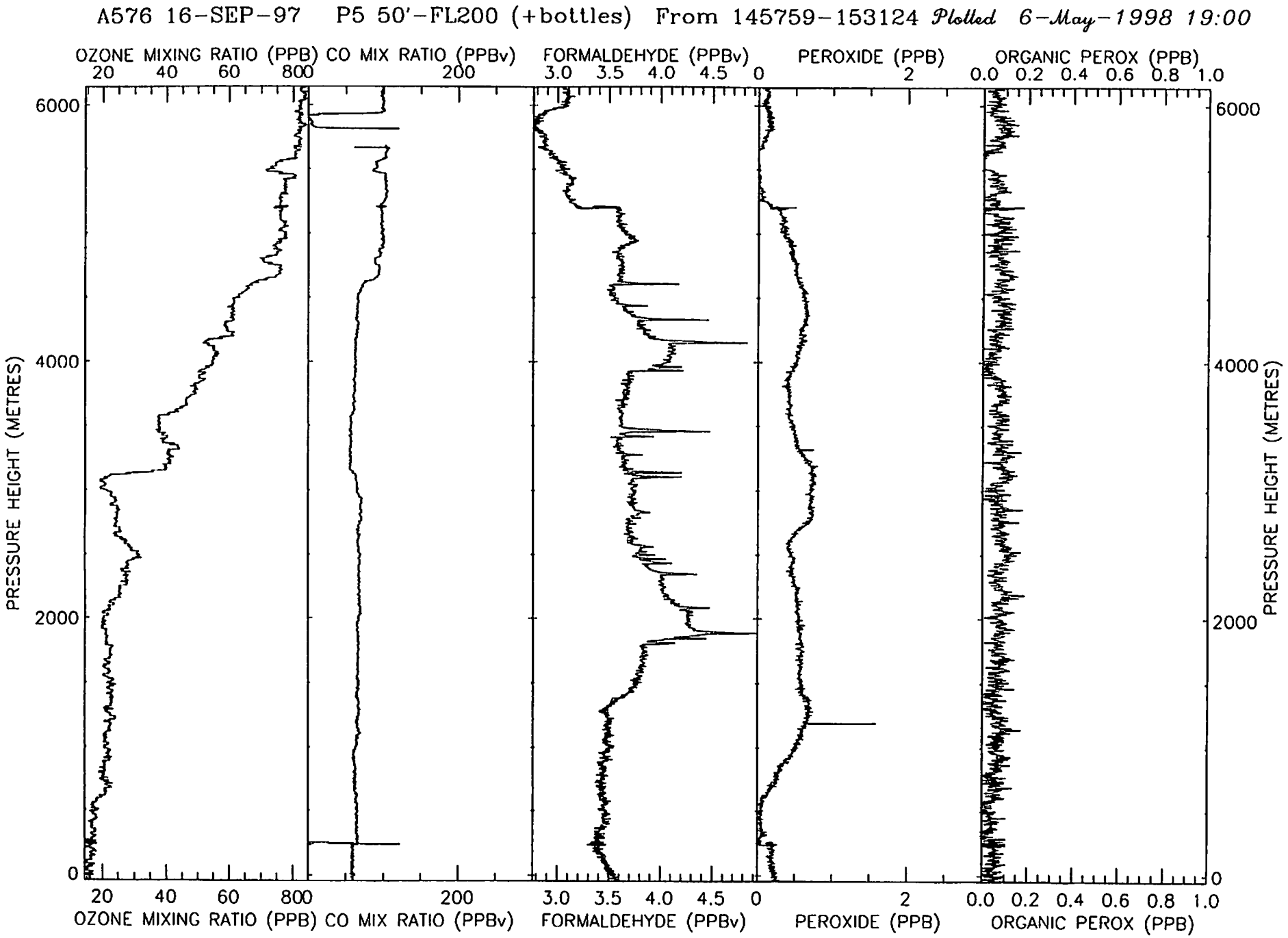
WIND SPEED (MS-1)
No of obs 1711
Mean 8.08484
Standard dev 1.72813
Max value 11.7369
Min value 2.76594

WIND DIRECTION (DEG)
Mean 270.531

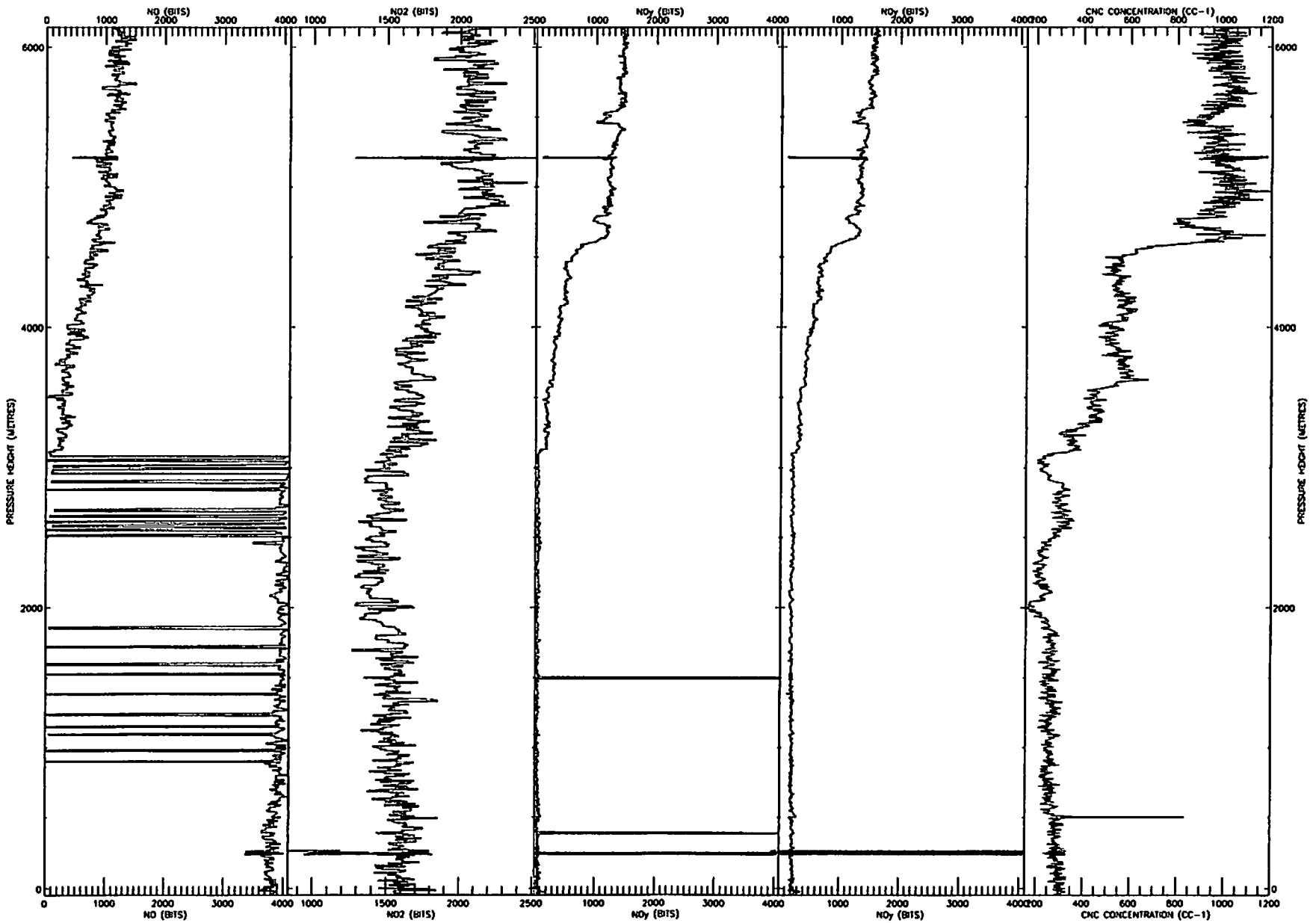
TRUE AIR SPEED (M S-1)
No of obs 1712
Mean 109.152
Standard dev 10.0546
Max value 132.968
Min value 91.8322

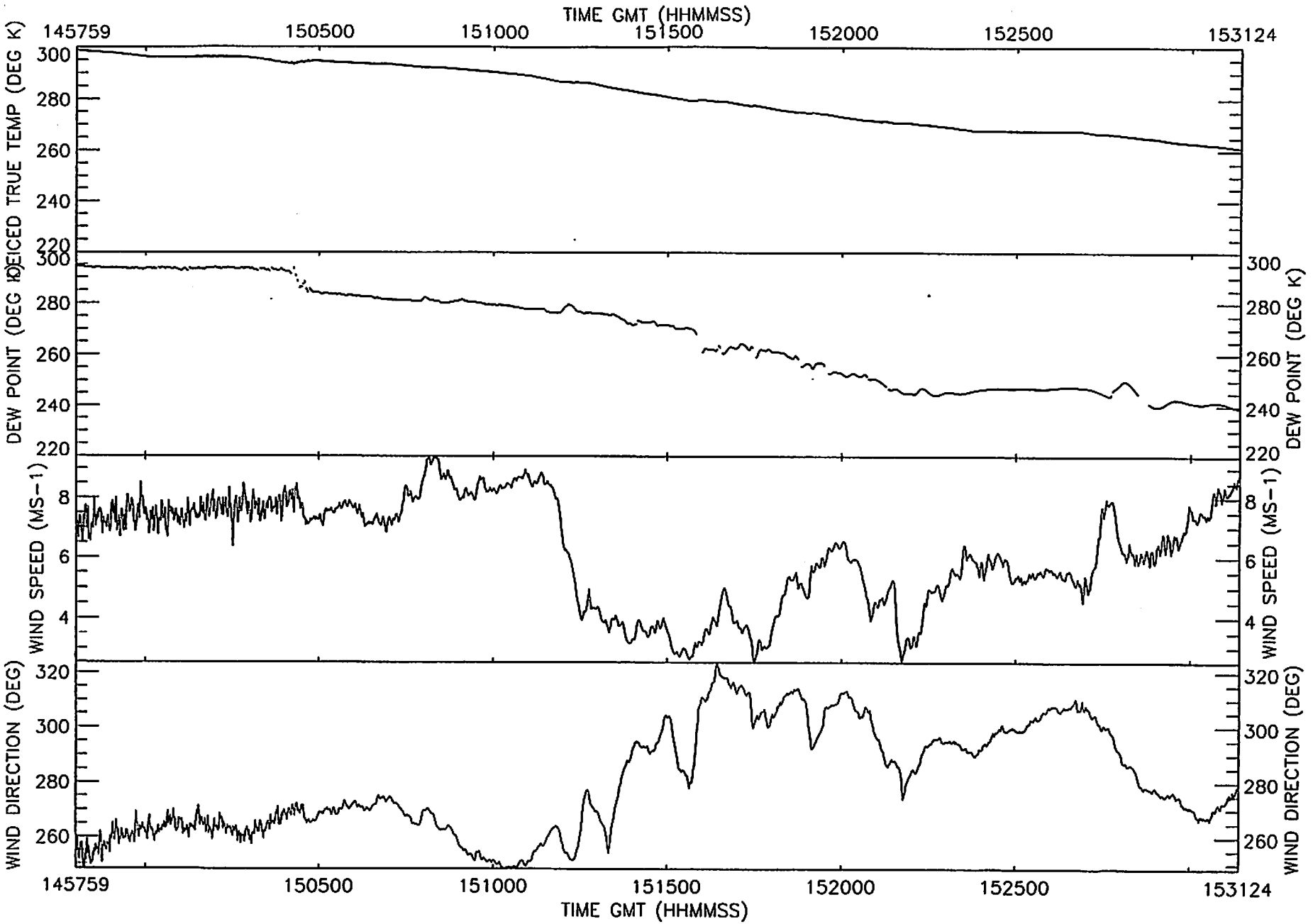
HEADING (DEG)
Mean 186.103

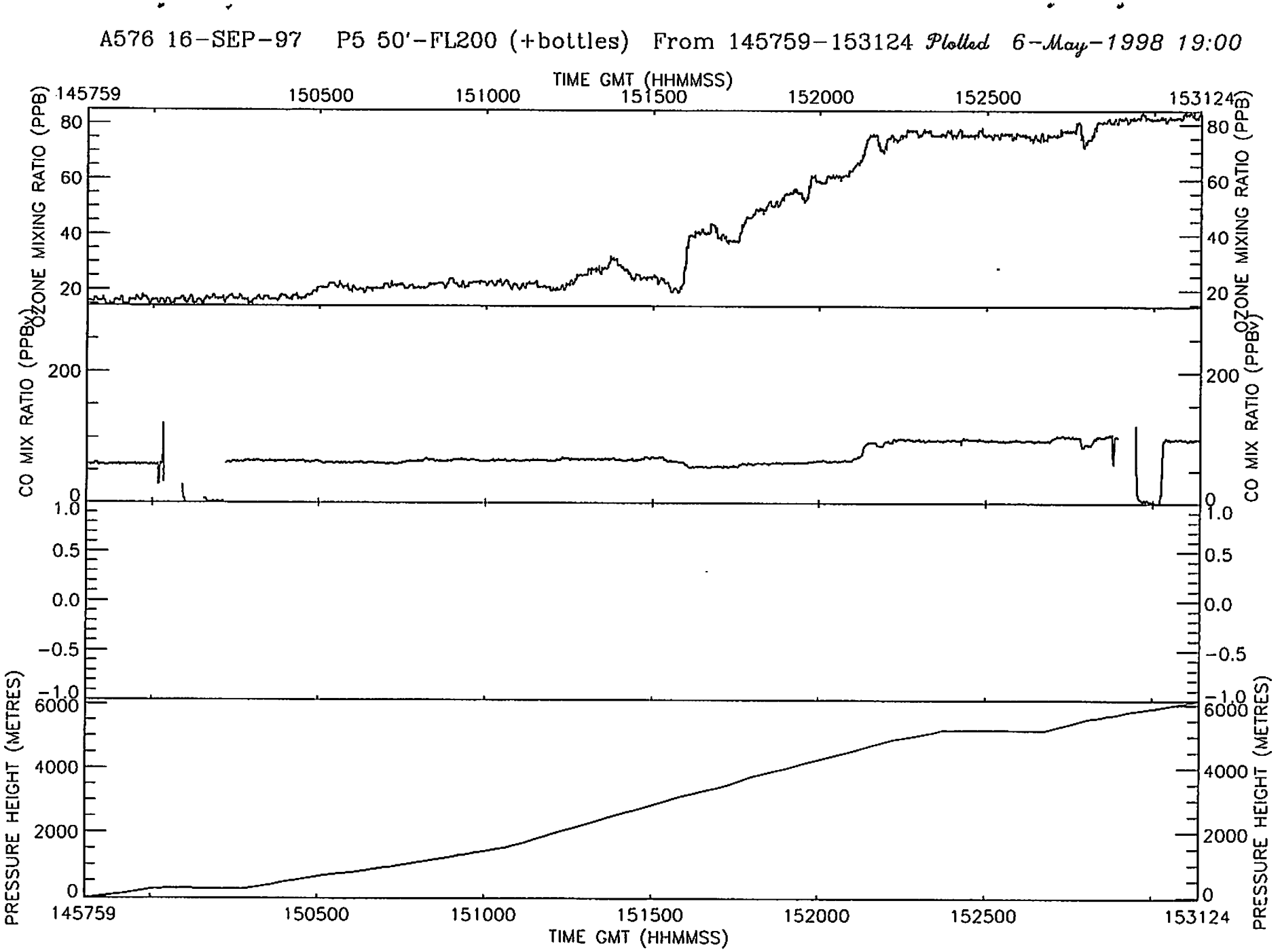

A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 Plotted 6-May-1998 19:00
DEICED TRUE TEMP (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()
220 240 260 280 300
300 320
4 6 8
260 280 300 320
1.0×10-6 5.0×10-6 4.0×10-6 5.0×10-6 1.0×10-5
PRESSURE HEIGHT (METRES)
6000
4000
2000
0
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

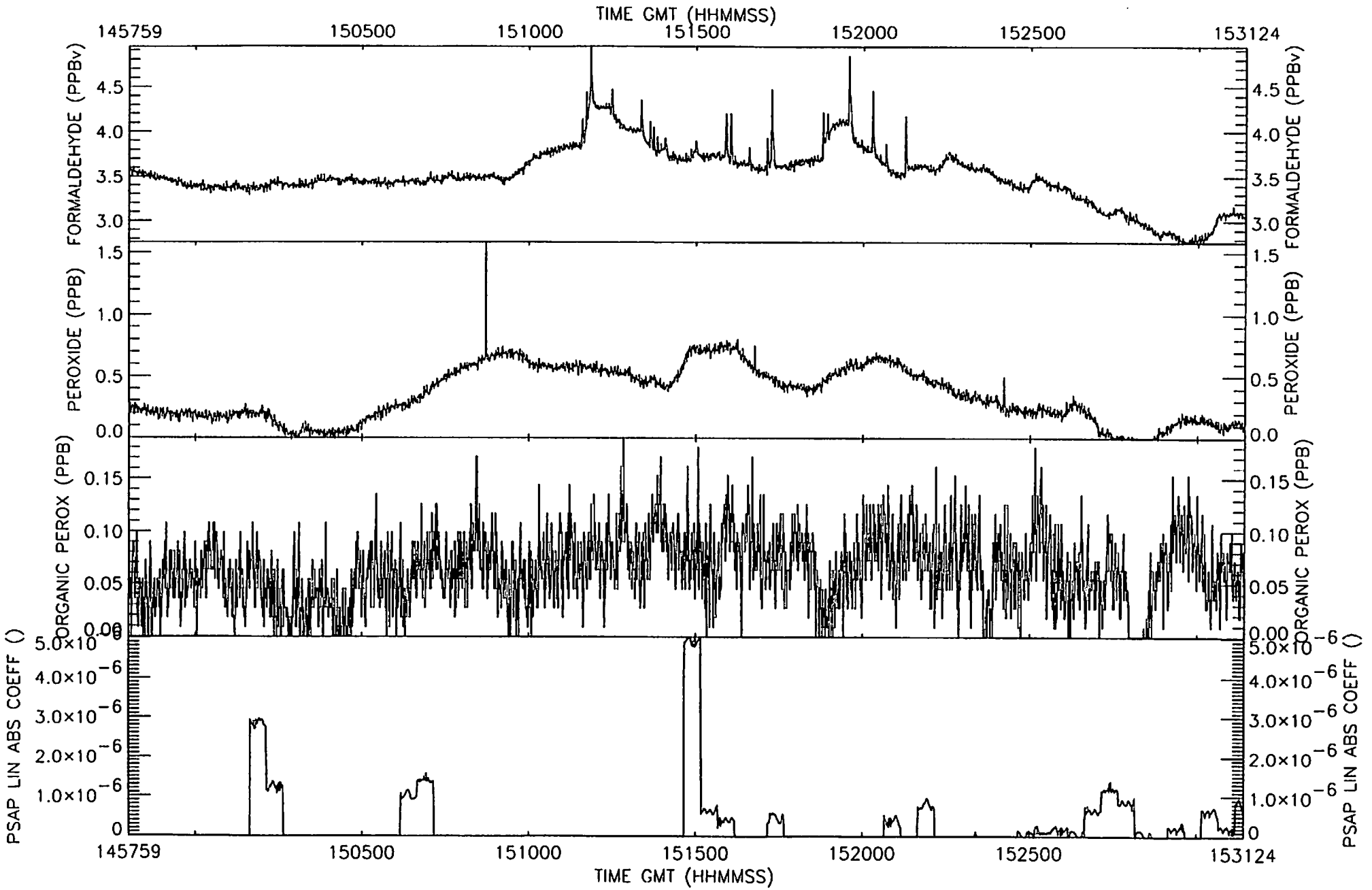

A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 Plotted 6-May-1998 19:00
OZONE MIXING RATIO (PPB)
20 40 60 800
CO MIX RATIO (PPBv)
200
FORMALDEHYDE (PPBv)
3.0 3.5 4.0 4.5
PEROXIDE (PPB)
0 2
ORGANIC PEROX (PPB)
0.0 0.2 0.4 0.6 0.8 1.0
PRESSURE HEIGHT (METRES)
6000
4000
2000
0

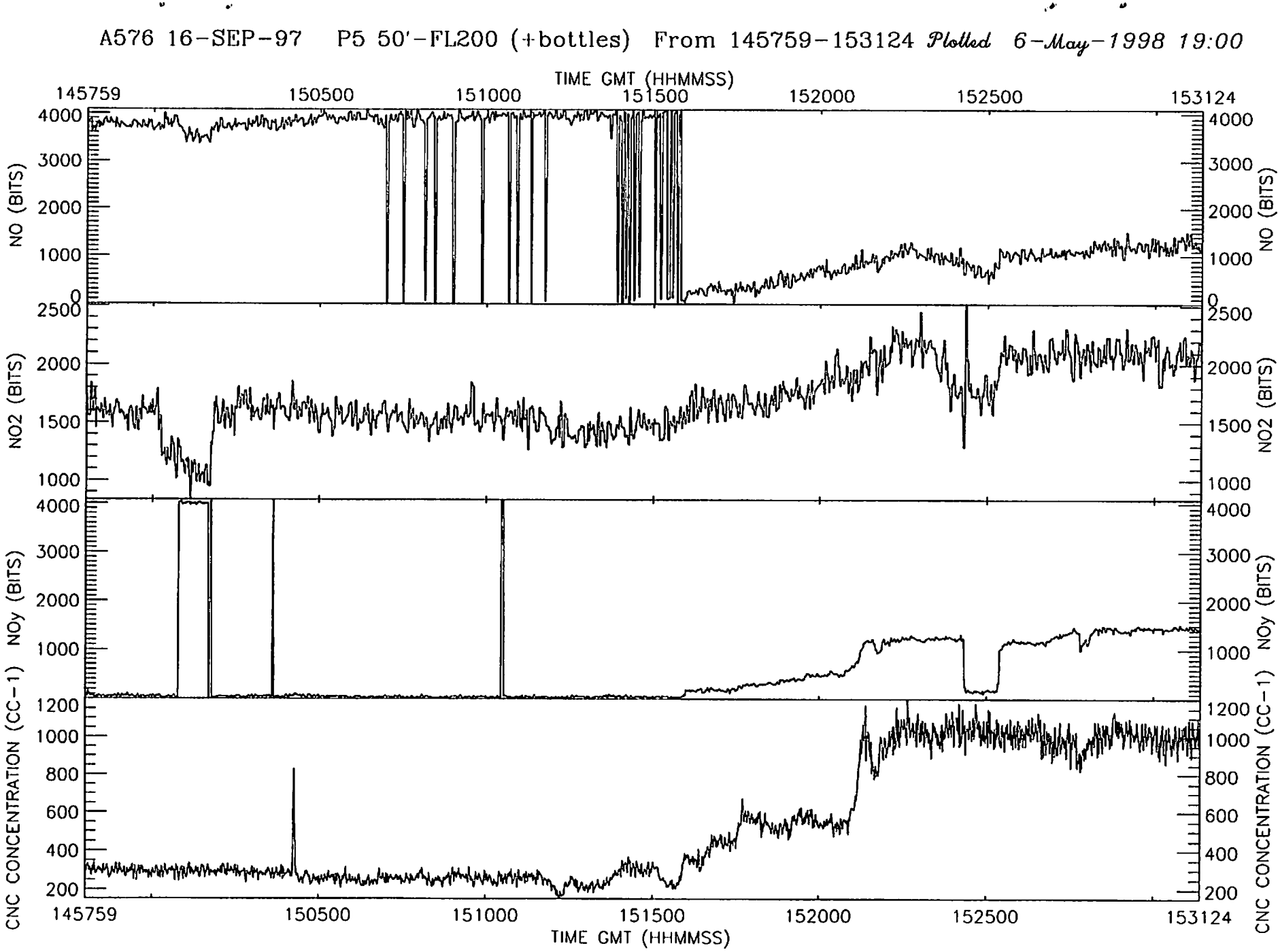
A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 *Plotted 22-May-1998 15:59*




A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 Plotted 6-May-1998 19:00
TIME GMT (HHMMSS)
145759
150500
151000
151500
152000
152500
153124
DEICED TRUE TEMP (DEG K)
DEW POINT (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
300
280
260
240
220
8
6
4
320


A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 Plotted 6-May-1998 19:00
TIME GMT (HHMMSS)
145759
150500
151000
151500
152000
152500
153124
OZONE MIXING RATIO (PPBV)
CO MIX RATIO (PPBV)
PRESSURE HEIGHT (METRES)
80
60
40
20
200
0
1.0
0.5
0.0
-0.5
-1.0
6000
4000
2000


A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 Plotted 6-May-1998 19:00
TIME GMT (HHMMSS)
145759
150500
151000
151500
152000
152500
153124
FORMALDEHYDE (PPBv)
PEROXIDE (PPB)
ORGANIC PEROX (PPB)
PSAP LIN ABS COEFF ()


A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 Plotted 6-May-1998 19:00
TIME GMT (HHMMSS)
145759
150500
151000
151500
152000
152500
153124
NO (BITS)
4000
3000
2000
1000
0
NO2 (BITS)
2500
2000
1500
1000
NOy (BITS)
CNC CONCENTRATION (CC-1)
1200
1000
800
600
400
200

A576 16-SEP-97 P5 50'-FL200 (+bottles) From 145759-153124 *Plotted 6-May-1998 19:00*

STATIC PRESSURE (MB)
No of obs 2006
Mean 734.660
Standard dev 186.402
Max value 1018.61
Min value 462.736

DEICED TRUE TEMP (DEG K)
No of obs 2006
Mean 281.466
Standard dev 11.9093
Max value 298.943
Min value 261.242

DEW POINT (DEG K)
No of obs 2006
Mean 267.847
Standard dev 18.7014
Max value 294.386
Min value 239.031

OZONE MIXING RATIO (PPB)
No of obs 2006
Mean 42.5574
Standard dev 26.0383
Max value 84.7997
Min value 14.3034

PSAP LIN ABS COEFF ()
No of obs 2006
Mean 2.775312e-07
Standard dev 7.388245e-07
Max value 5.017811e-06
Min value -1.046657e-09

No good data

PRESSURE HEIGHT (METRES)
No of obs 2006
Mean 2843.69
Standard dev 2052.73
Max value 6141.27
Min value -44.5244

CORRECTED LATITUDE (DEGREES)
No of obs 2006
Mean 27.3582
Standard dev 0.551142
Max value 28.2525
Min value 26.3464

CORRECTED LONGITUDE (DEGREES)
No of obs 2006
Mean -28.4864
Standard dev 0.152440
Max value -28.2437
Min value -28.7422

NORTHWARD WIND COMPT (M S-1)
No of obs 2006
Mean -0.648230
Standard dev 1.84215
Max value 3.13998
Min value -4.44277

EASTWARD WIND COMPT (M S-1)
No of obs 2006
Mean 5.88958
Standard dev 1.92692
Max value 9.40937
Min value 2.16673

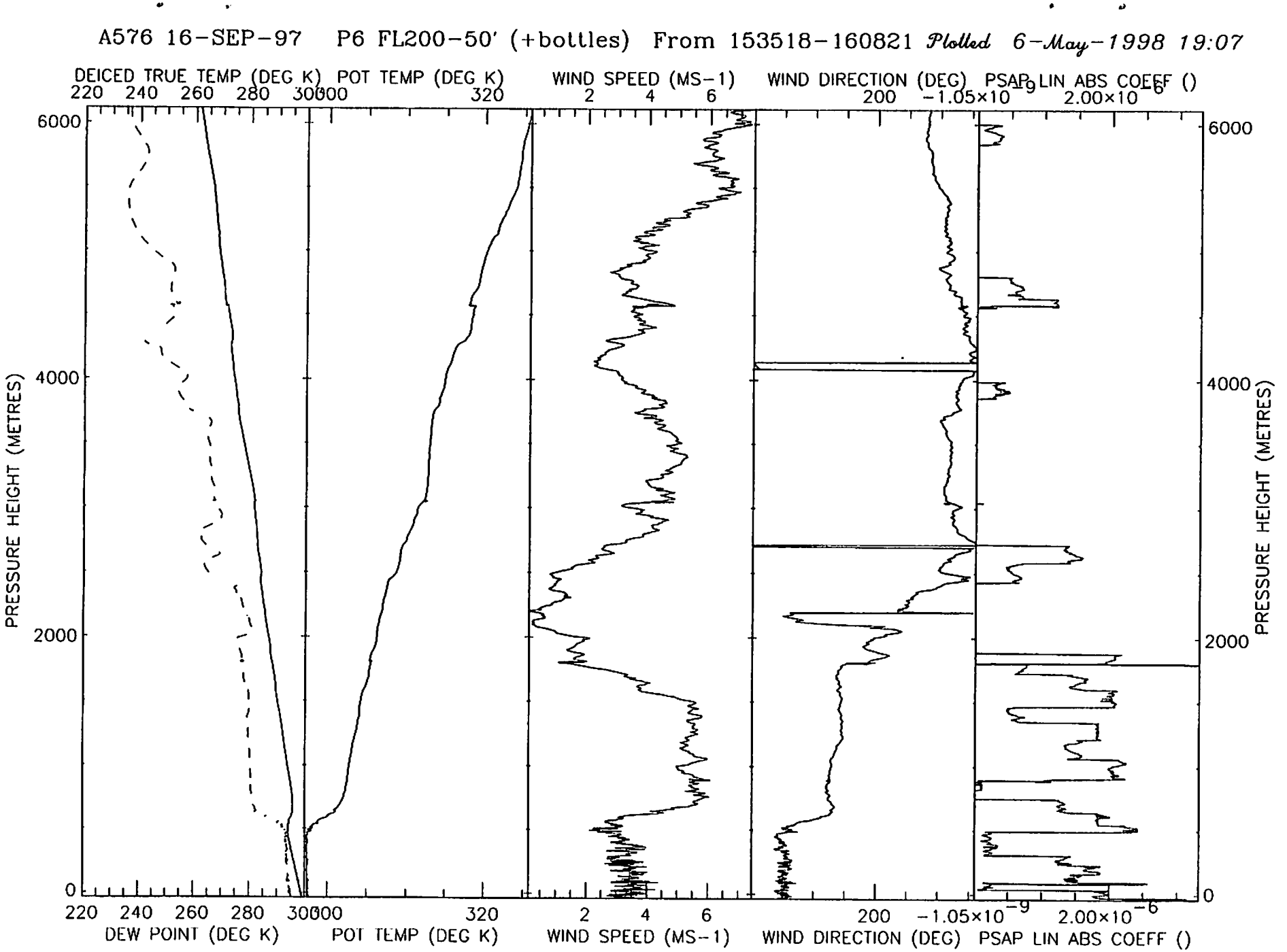
VERTICAL WIND COMPT (M S-1)
No of obs 2006
Mean -0.877725
Standard dev 0.482005
Max value 0.928543
Min value -1.61996

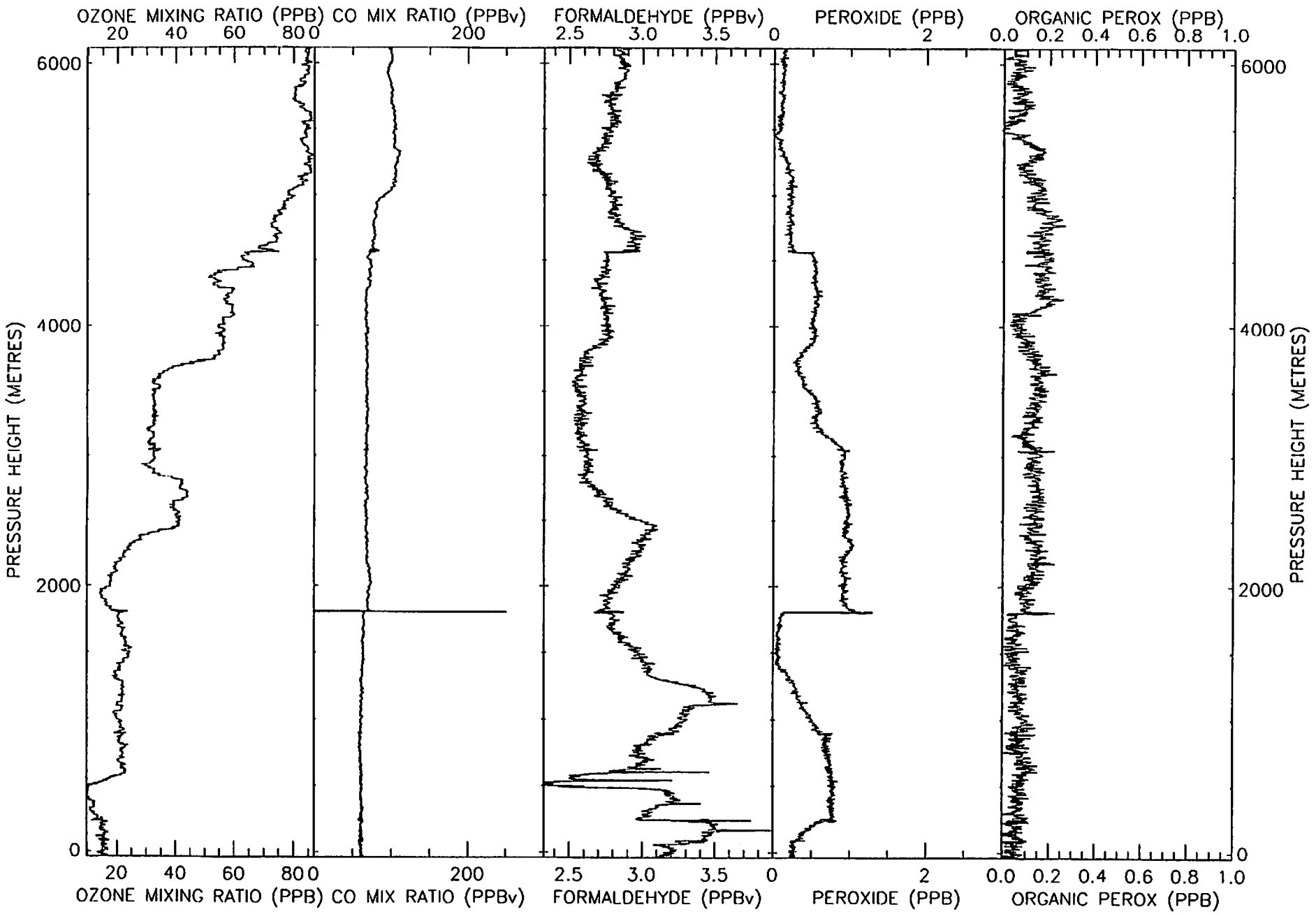
WIND SPEED (MS-1)
No of obs 2006
Mean 6.26135
Standard dev 1.73415
Max value 9.41614
Min value 2.53620

WIND DIRECTION (DEG)
Mean 276.281

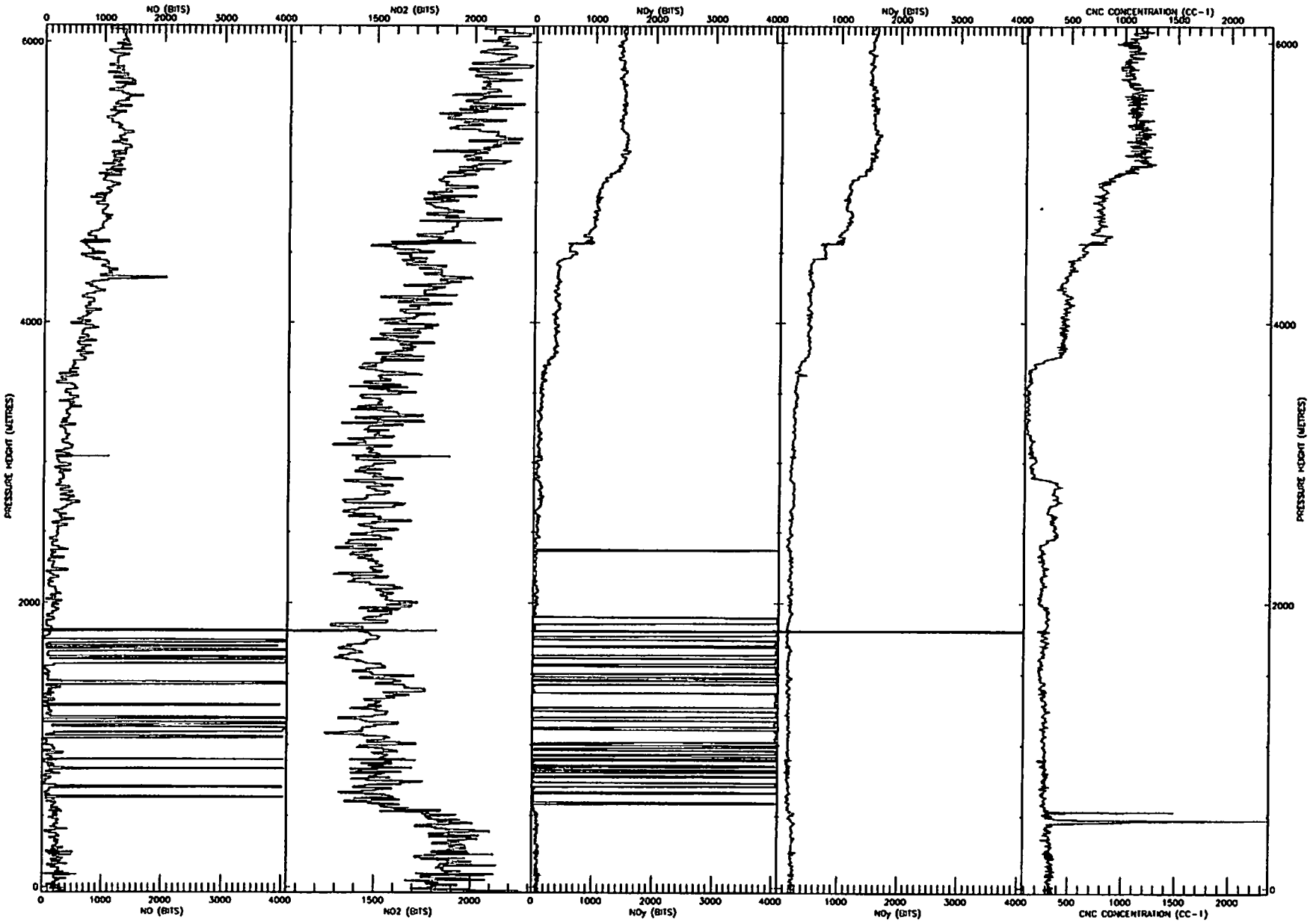
TRUE AIR SPEED (M S-1)
No of obs 2006
Mean 108.939
Standard dev 10.2087
Max value 128.877
Min value 92.4366

HEADING (DEG)
Mean 193.141

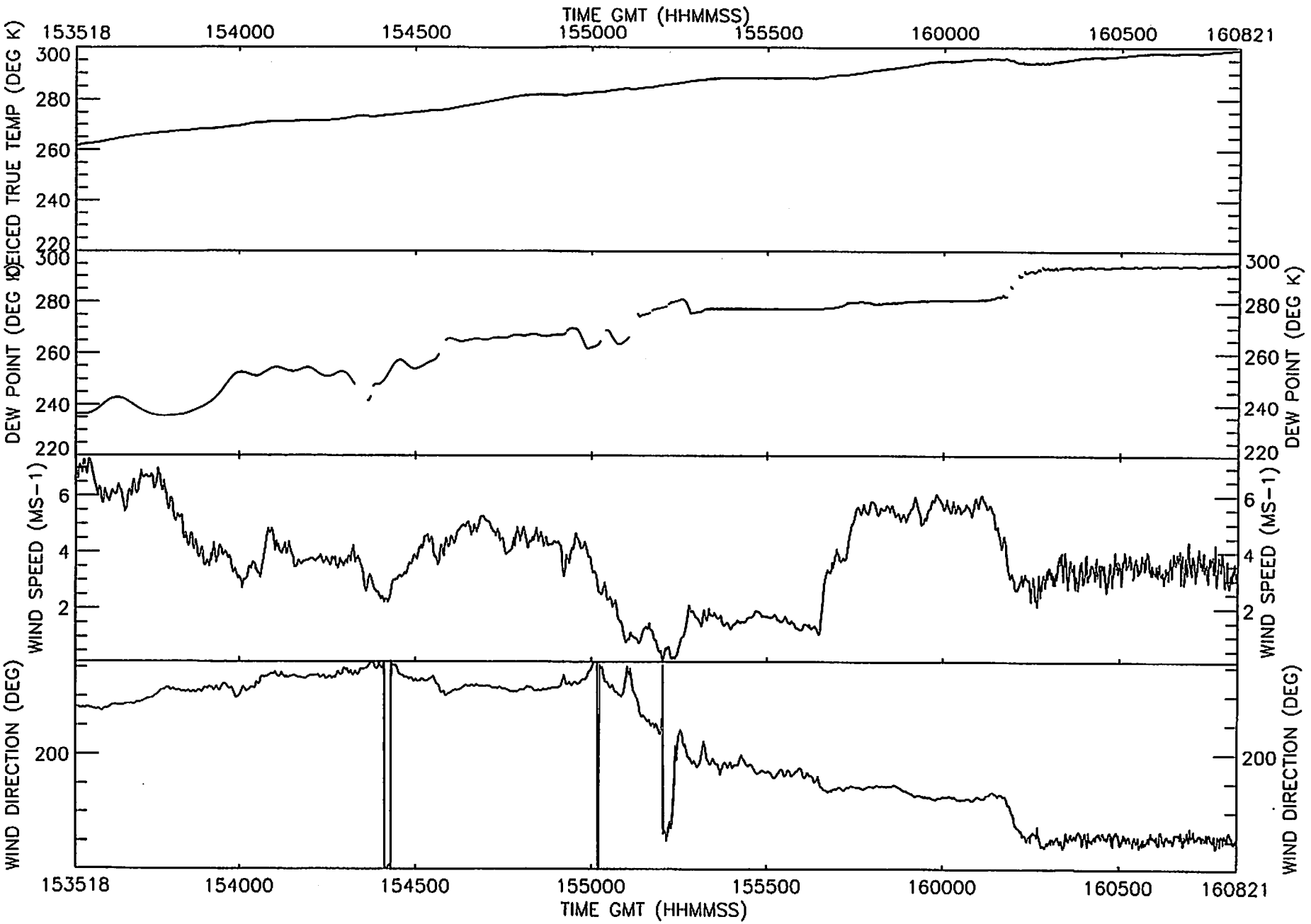

A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 Plotted 6-May-1998 19:07
DEICED TRUE TEMP (DEG K)
220 240 260 280 300
POT TEMP (DEG K)
300 320
WIND SPEED (MS-1)
2 4 6
WIND DIRECTION (DEG)
200
PSAP LIN ABS COEFF ()
-1.05×10-9
2.00×10-6
PRESSURE HEIGHT (METRES)
6000
4000
2000
0
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()


A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 Plotted 6-May-1998 19:07
OZONE MIXING RATIO (PPB)
20 40 60 80
CO MIX RATIO (PPBv)
0 200
FORMALDEHYDE (PPBv)
2.5 3.0 3.5
PEROXIDE (PPB)
0 2
ORGANIC PEROX (PPB)
0.0 0.2 0.4 0.6 0.8 1.0
PRESSURE HEIGHT (METRES)
6000
4000
2000
0

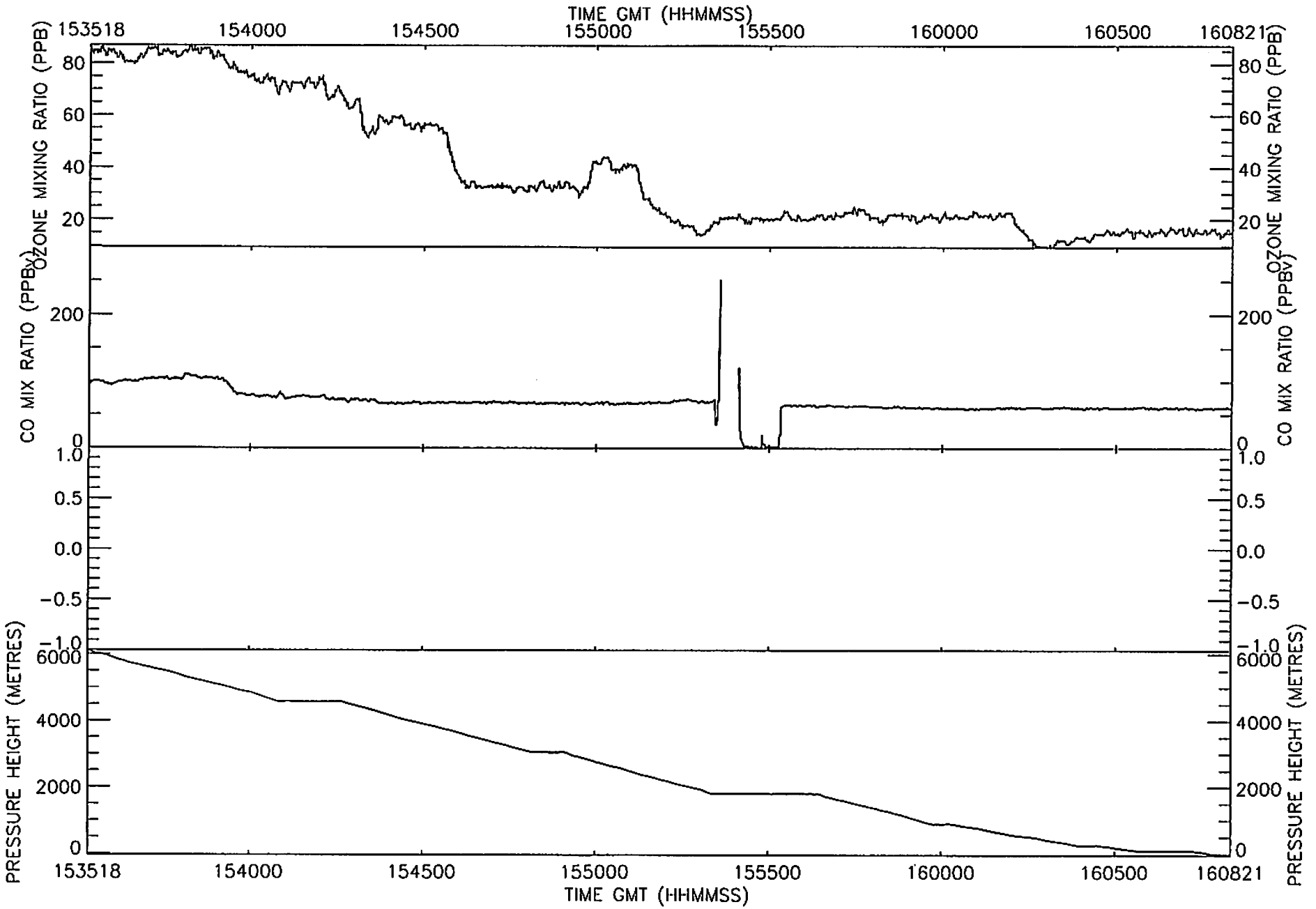
A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 *Plotted 22-May-1998 16:07*



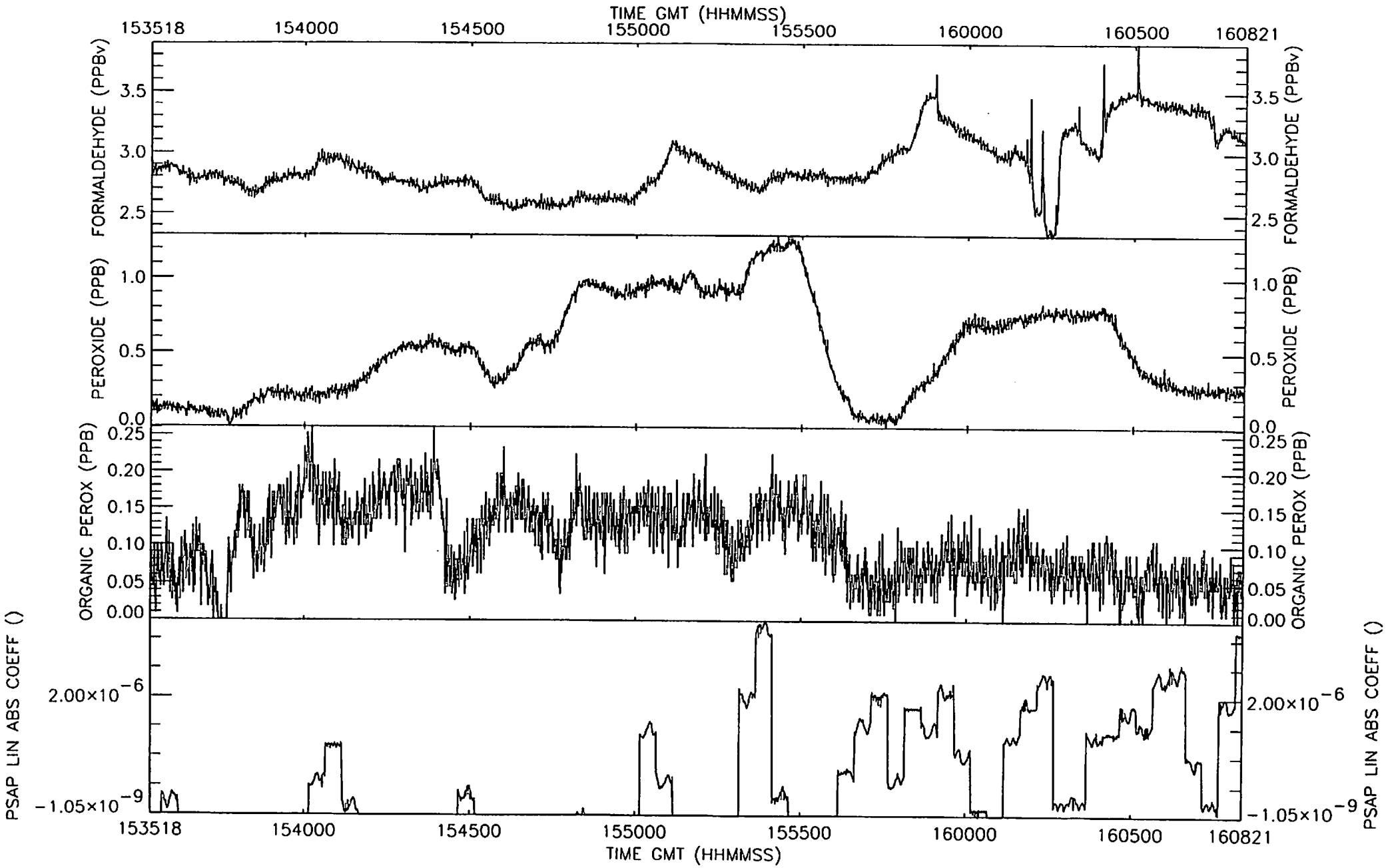
A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 *Plotted 6-May-1998 19:07*

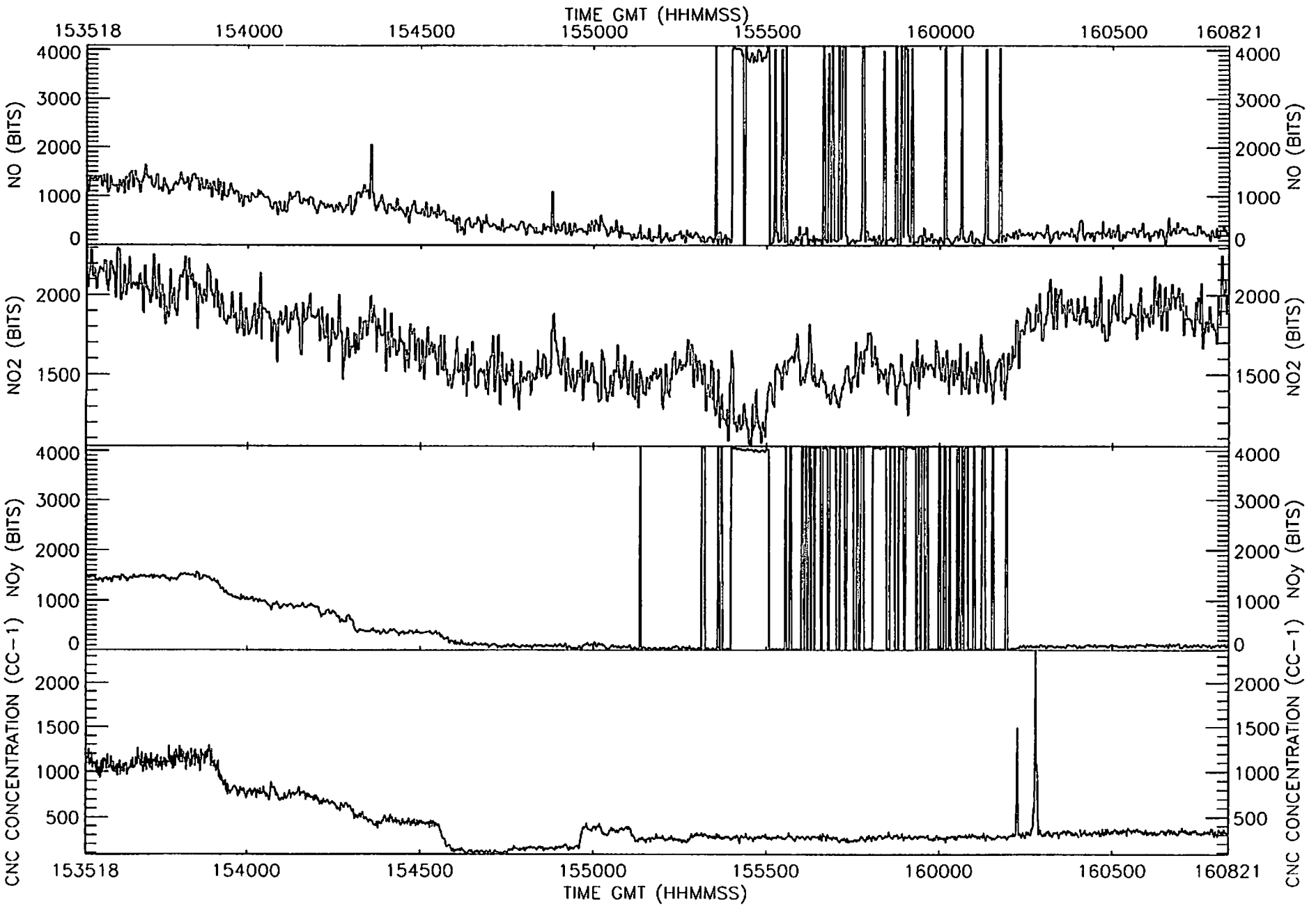


A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 *Plotted 6-May-1998 19:07*



A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 *Plotted 6-May-1998 19:07*




A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 Plotted 6-May-1998 19:07
TIME GMT (HHMMSS)
153518
154000
154500
155000
155500
160000
160500
160821
NO (BITS)
4000
3000
2000
1000
0
NO2 (BITS)
2000
1500
NOy (BITS)
CNC CONCENTRATION (CC-1)
500

A576 16-SEP-97 P6 FL200-50' (+bottles) From 153518-160821 *Plotted 6-May-1998 19:07*

STATIC PRESSURE (MB)
No of obs 1984
Mean 755.437
Standard dev 168.897
Max value 1017.72
Min value 464.293

DEICED TRUE TEMP (DEG K)
No of obs 1984
Mean 283.346
Standard dev 10.8794
Max value 299.096
Min value 261.648

DEW POINT (DEG K)
No of obs 1984
Mean 269.464
Standard dev 18.0236
Max value 294.819
Min value 235.544

OZONE MIXING RATIO (PPB)
No of obs 1984
Mean 38.3458
Standard dev 24.9599
Max value 86.9256
Min value 9.64946

PSAP LIN ABS COEFF ()
No of obs 1984
Mean 6.369831e-07
Standard dev 8.602622e-07
Max value 3.320436e-06
Min value -1.046657e-09

No good data

PRESSURE HEIGHT (METRES)
No of obs 1984
Mean 2576.97
Standard dev 1834.13
Max value 6116.85
Min value -37.1167

CORRECTED LATITUDE (DEGREES)
No of obs 1984
Mean 25.0240
Standard dev 1.39694
Max value 26.0776
Min value -32.0909

CORRECTED LONGITUDE (DEGREES)
No of obs 1984
Mean -29.0180
Standard dev 0.950039
Max value 12.7849
Min value -29.3030

NORTHWARD WIND COMPT (M S-1)
No of obs 1984
Mean -4.01498
Standard dev 135.629
Max value 4.71049
Min value -6041.15

EASTWARD WIND COMPT (M S-1)
No of obs 1984
Mean 0.278776
Standard dev 3.11135
Max value 31.7301
Min value -5.18401

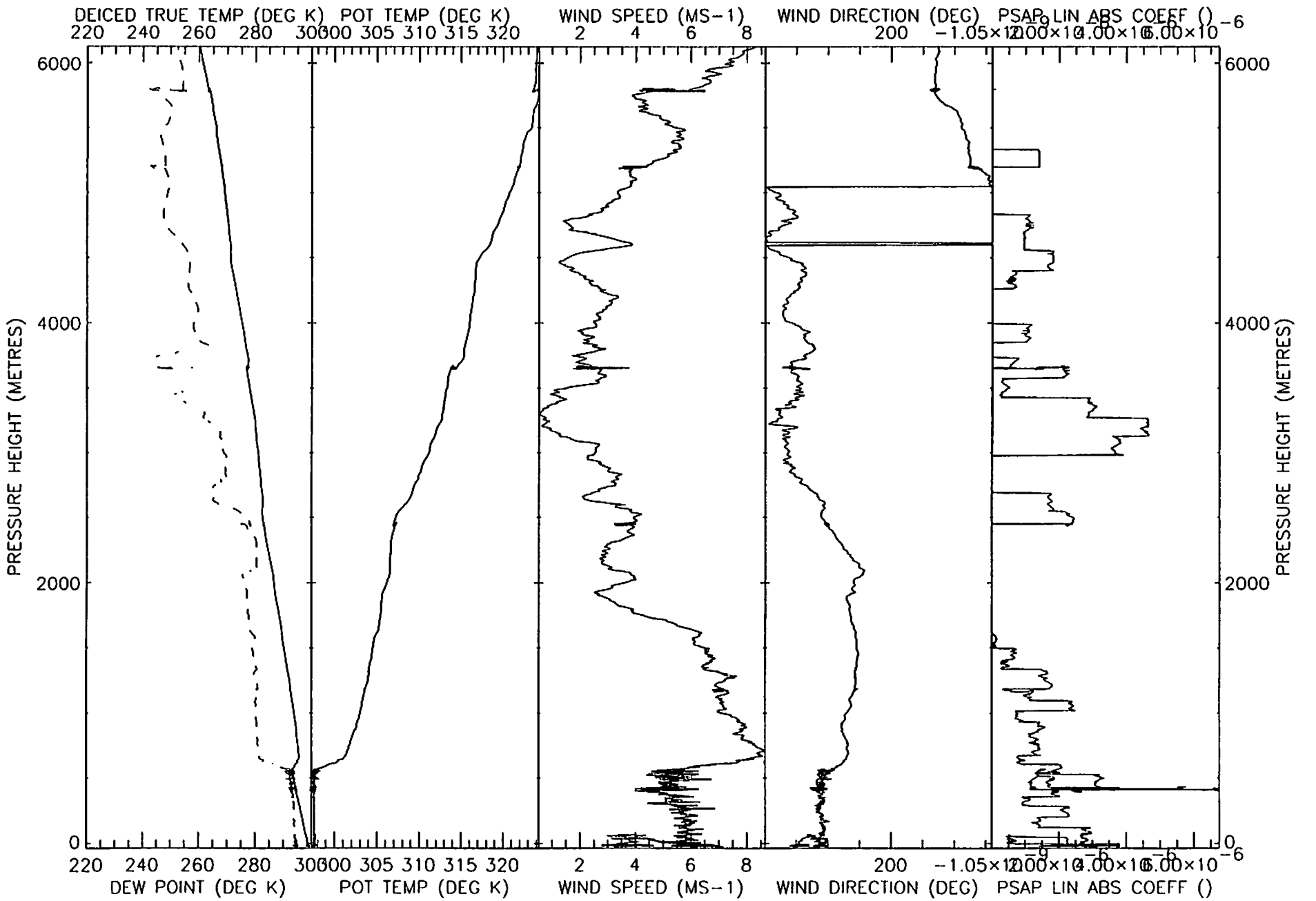
VERTICAL WIND COMPT (M S-1)
No of obs 1984
Mean -2.48285
Standard dev 119.275
Max value 1.59050
Min value -5312.55

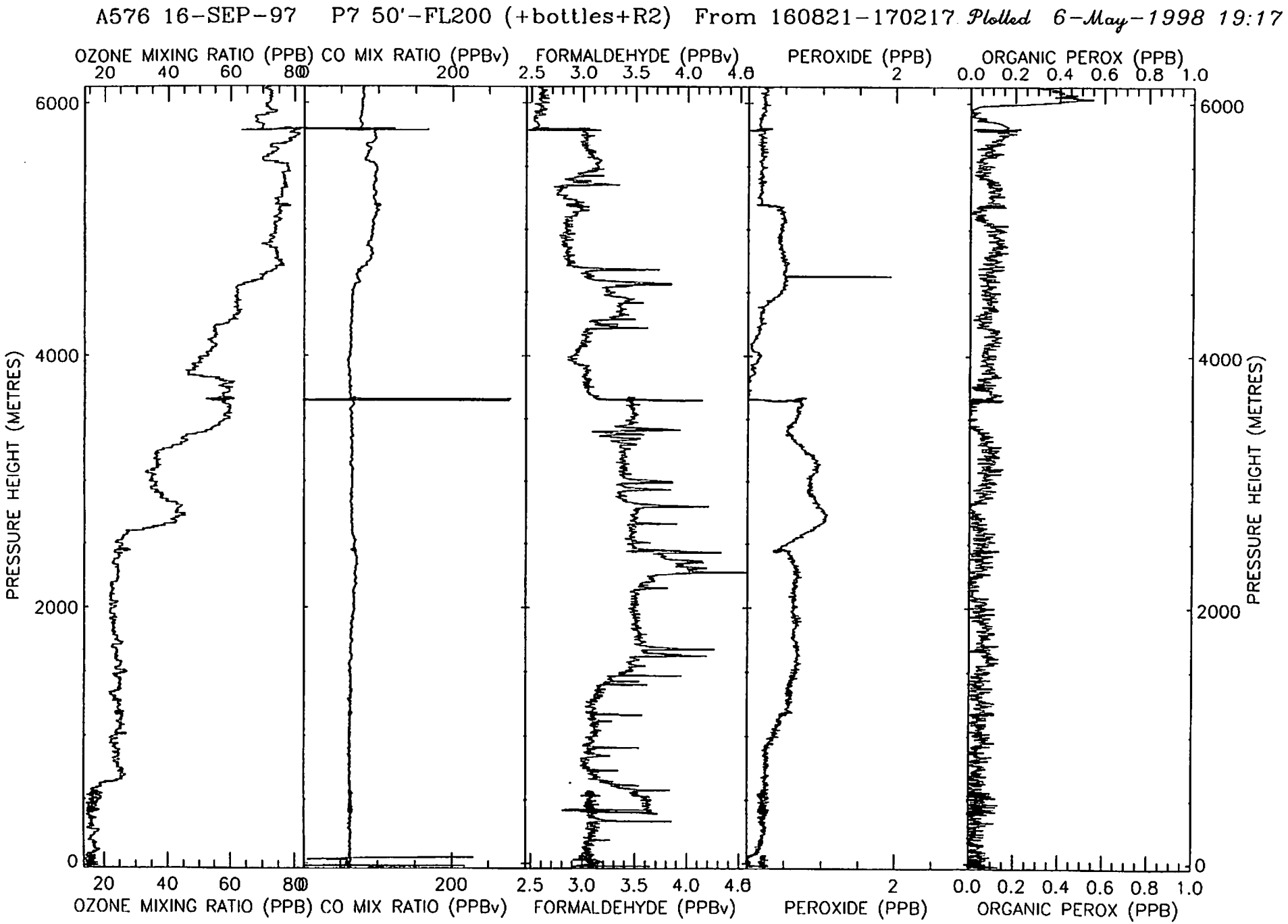
WIND SPEED (MS-1)
No of obs 1982
Mean 3.74627
Standard dev 1.53362
Max value 7.44257
Min value 0.115997

WIND DIRECTION (DEG)
Mean 356.028

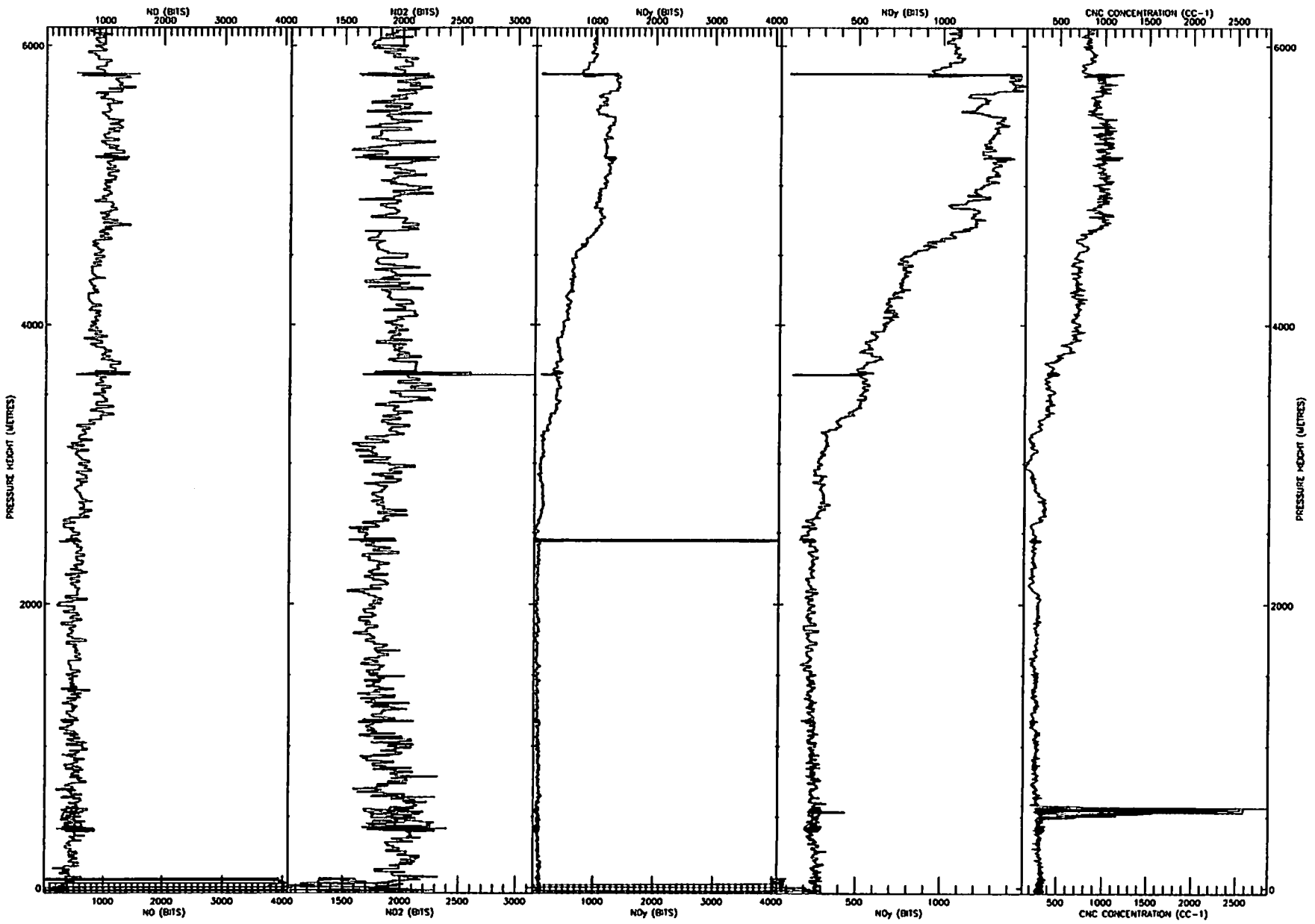
TRUE AIR SPEED (M S-1)
No of obs 1984
Mean 109.588
Standard dev 11.0613
Max value 133.826
Min value 91.4071

HEADING (DEG)
Mean 193.013

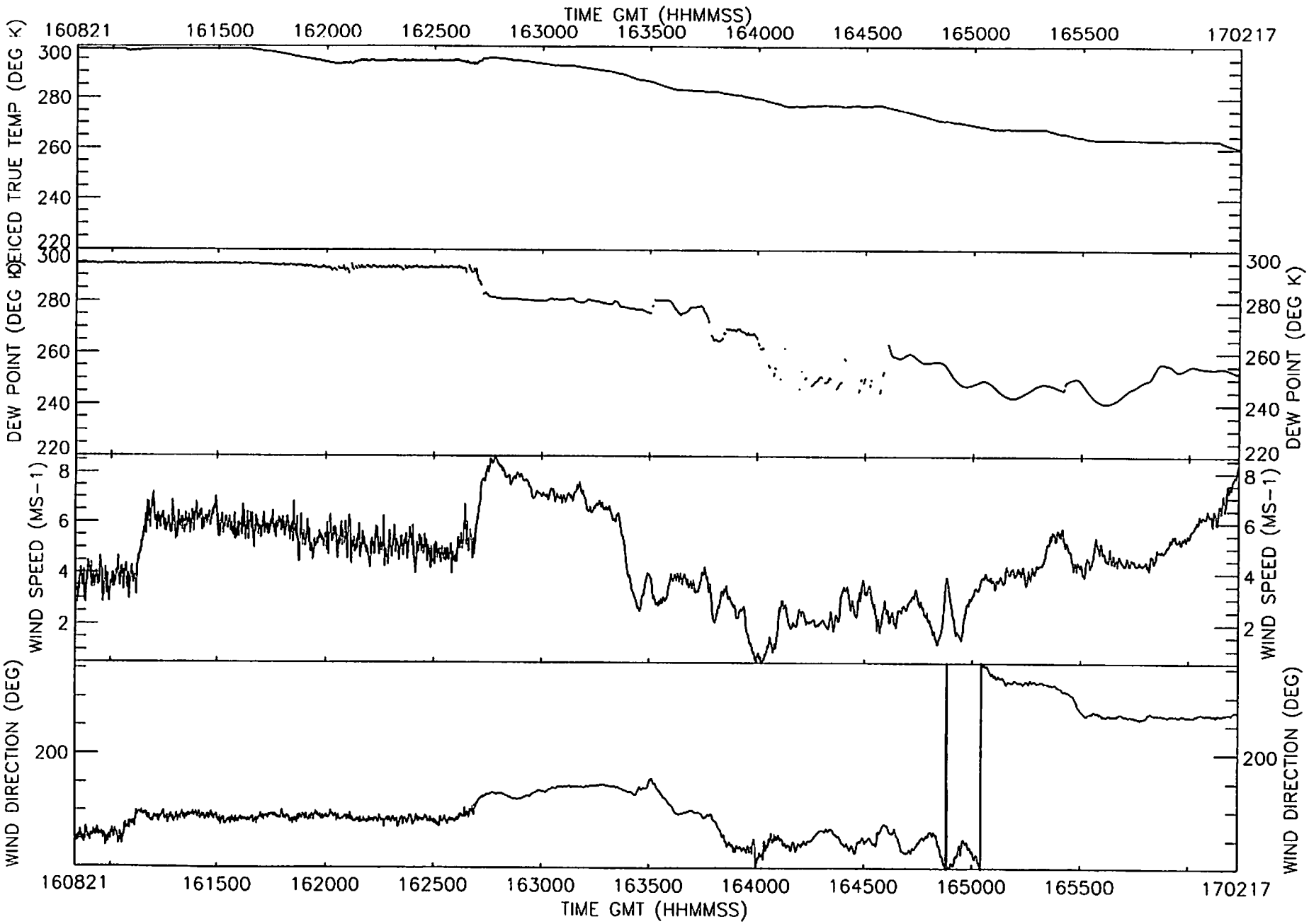

A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 Plotted 6-May-1998 19:17
DEICED TRUE TEMP (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()
220 240 260 280 300
300 305 310 315 320
2 4 6 8
200
6000
4000
2000
0
PRESSURE HEIGHT (METRES)
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()


A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 Plotted 6-May-1998 19:17
OZONE MIXING RATIO (PPB)
20 40 60 80
CO MIX RATIO (PPBv)
200
FORMALDEHYDE (PPBv)
2.5 3.0 3.5 4.0 4.6
PEROXIDE (PPB)
2
ORGANIC PEROX (PPB)
0.0 0.2 0.4 0.6 0.8 1.0
PRESSURE HEIGHT (METRES)
6000
4000
2000
0

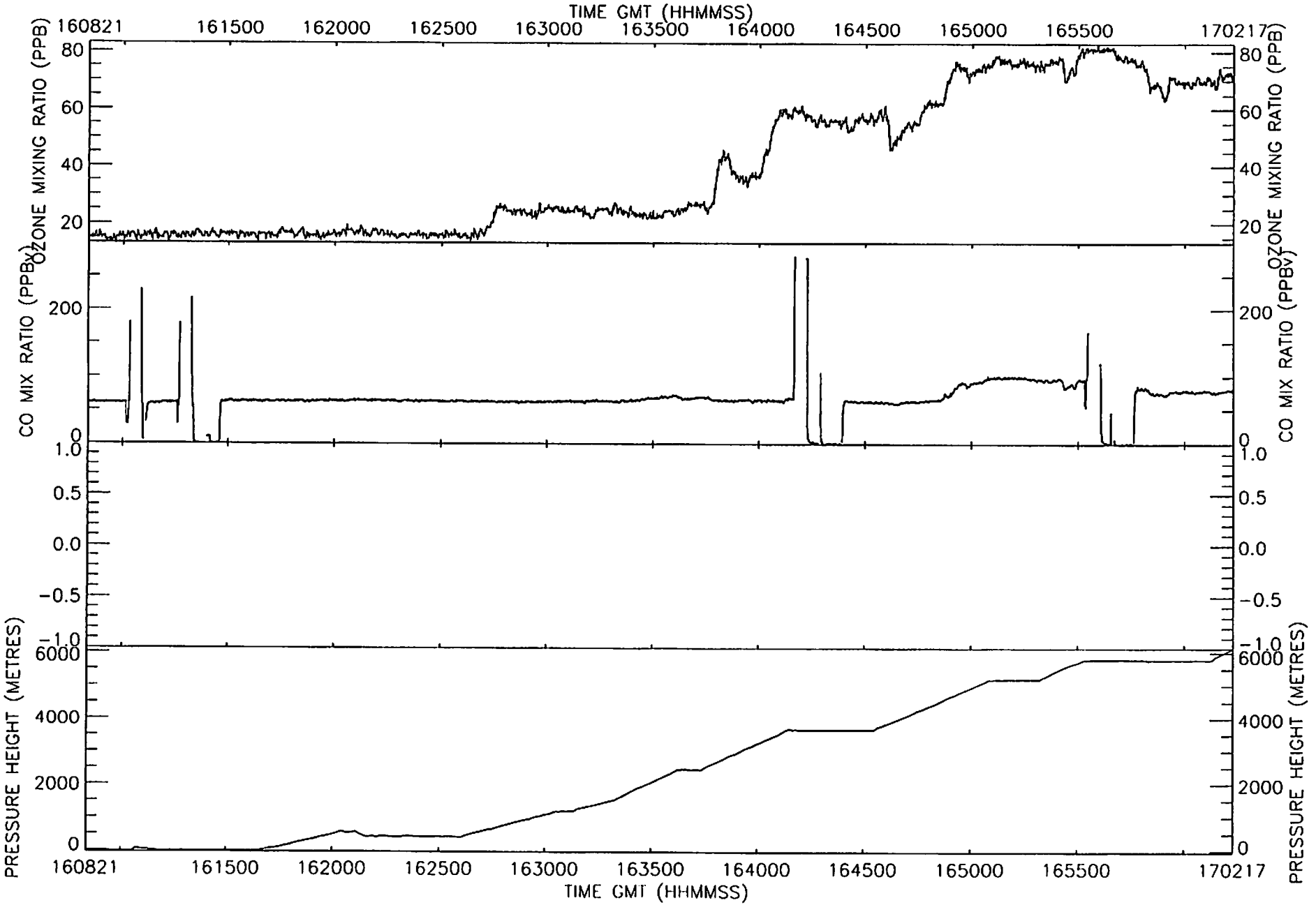
A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 *Plotted 22-May-1998 16:20*



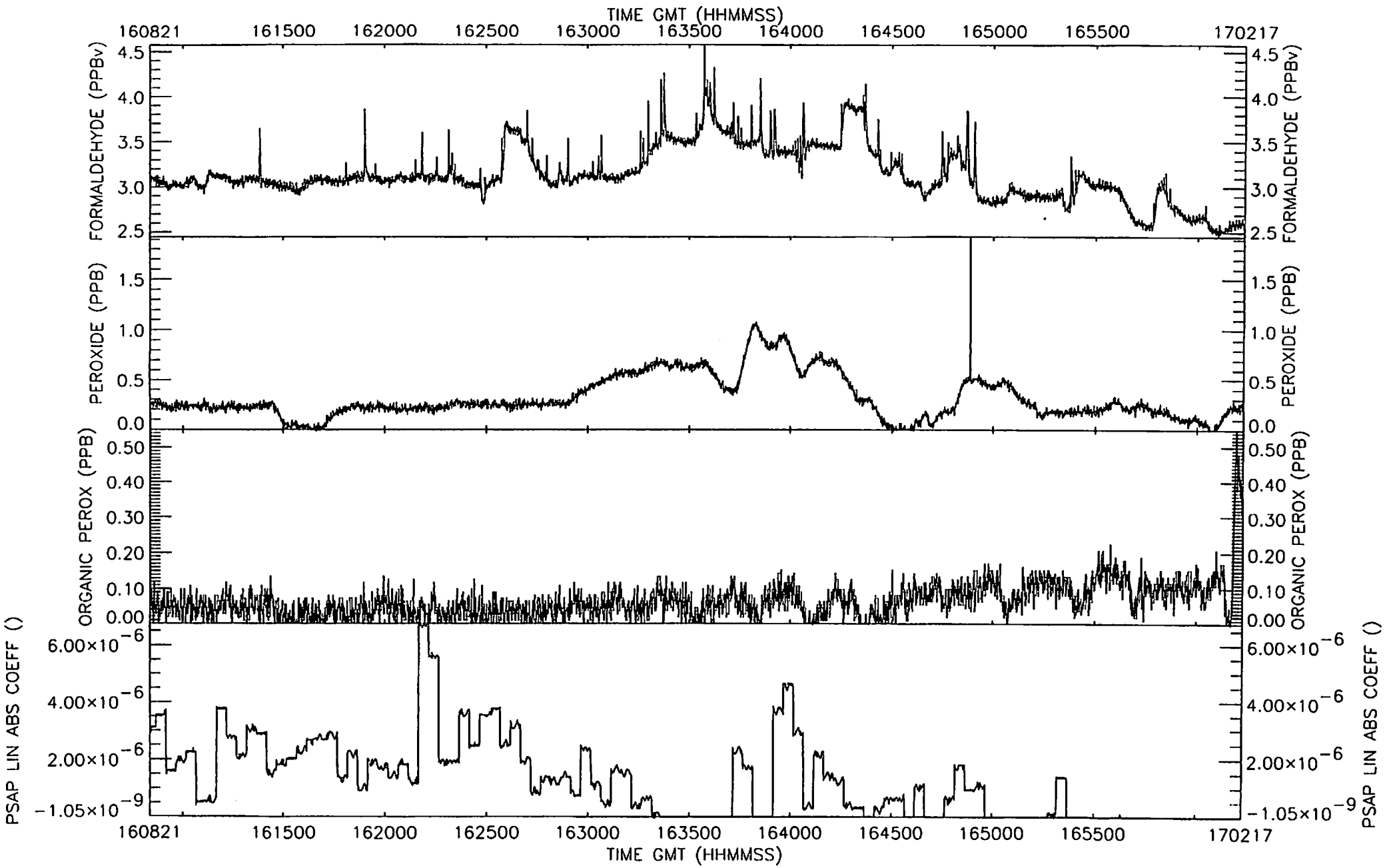
A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 *Plotted 6-May-1998 19:17*



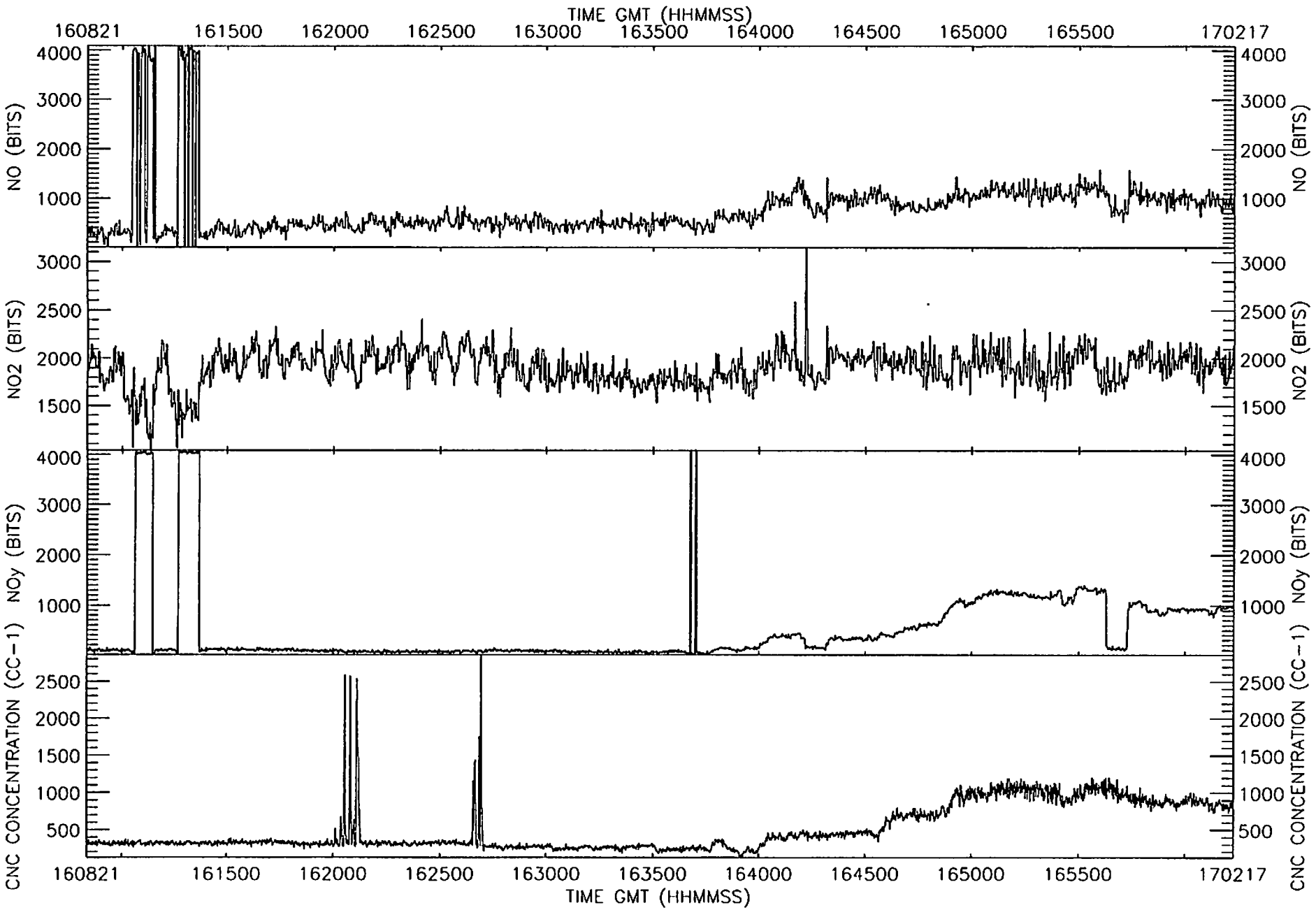
A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 *Plotted 6-May-1998 19:17*



A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 *Plotted 6-May-1998 19:17*



A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 *Plotted 6-May-1998 19:17*



A576 16-SEP-97 P7 50'-FL200 (+bottles+R2) From 160821-170217 *Plotted 6-May-1998 19:17*

STATIC PRESSURE (MB)
No of obs 3237
Mean 769.760
Standard dev 199.842
Max value 1017.60
Min value 463.547

DEICED TRUE TEMP (DEG K)
No of obs 3237
Mean 283.532
Standard dev 12.9122
Max value 299.103
Min value 260.231

DEW POINT (DEG K)
No of obs 3237
Mean 271.993
Standard dev 19.4295
Max value 294.996
Min value 240.613

OZONE MIXING RATIO (PPB)
No of obs 3237
Mean 39.6606
Standard dev 24.3795
Max value 82.9760
Min value 13.4154

PSAP LIN ABS COEFF ()
No of obs 3237
Mean 1.262941e-06
Standard dev 1.364015e-06
Max value 6.751819e-06
Min value -1.046657e-09

No good data

PRESSURE HEIGHT (METRES)
No of obs 3237
Mean 2492.43
Standard dev 2173.04
Max value 6128.54
Min value -36.1742

CORRECTED LATITUDE (DEGREES)
No of obs 3237
Mean 25.3231
Standard dev 0.880877
Max value 26.9854
Min value 24.0160

CORRECTED LONGITUDE (DEGREES)
No of obs 3237
Mean -28.9904
Standard dev 0.231083
Max value -28.5722
Min value -29.3435

NORTHWARD WIND COMPT (M S-1)
No of obs 3237
Mean -3.661041e-02
Standard dev 2.36502
Max value 6.03359
Min value -4.35841

EASTWARD WIND COMPT (M S-1)
No of obs 3237
Mean -2.06231
Standard dev 3.79752
Max value 8.29032
Min value -7.08311

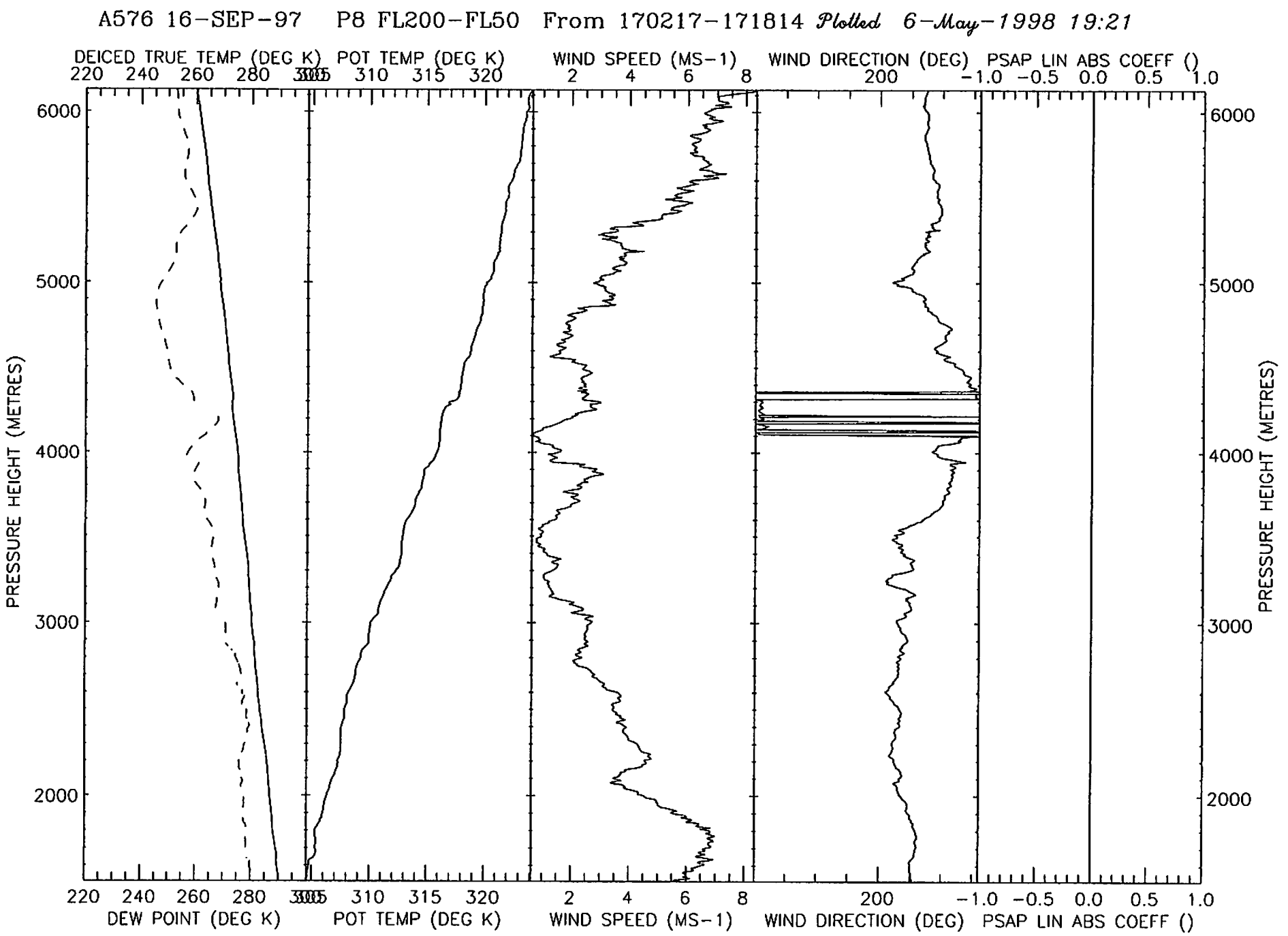
VERTICAL WIND COMPT (M S-1)
No of obs 3237
Mean -0.571018
Standard dev 0.500673
Max value 1.18452
Min value -2.03392

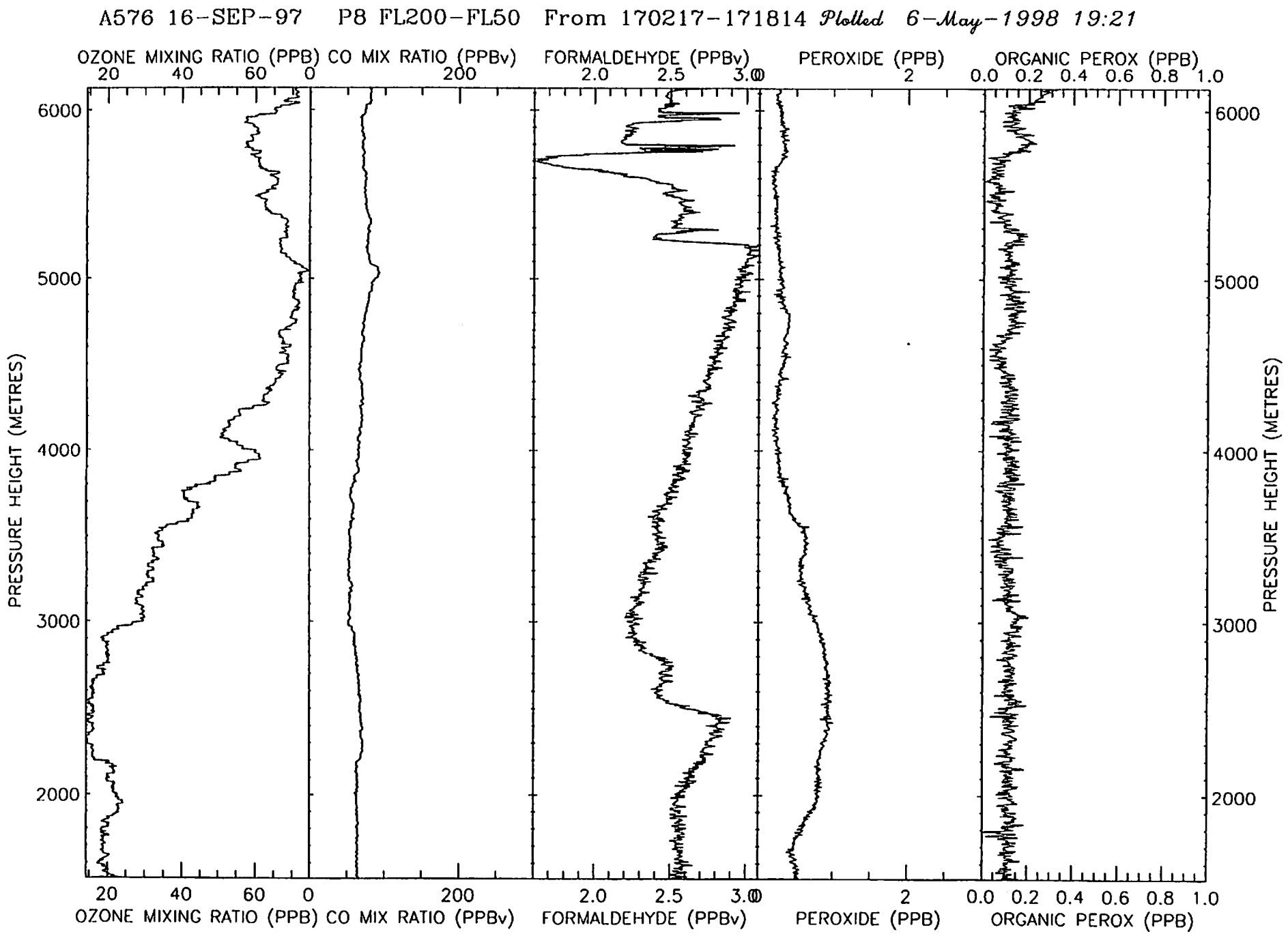
WIND SPEED (MS-1)
No of obs 3237
Mean 4.61823
Standard dev 1.71335
Max value 8.65067
Min value 0.514800

WIND DIRECTION (DEG)
Mean 88.9830

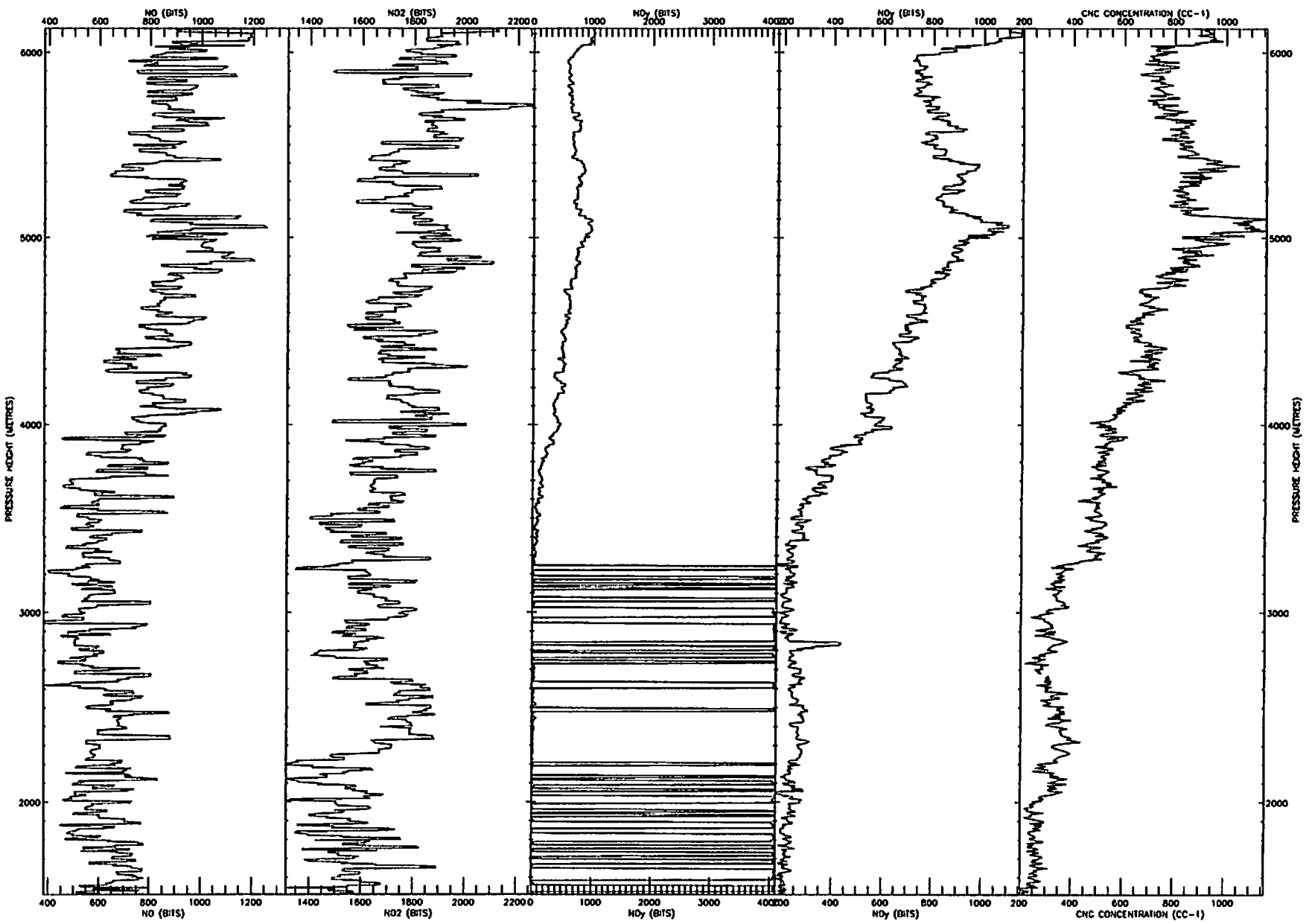
TRUE AIR SPEED (M S-1)
No of obs 3237
Mean 110.128
Standard dev 13.8526
Max value 140.150
Min value 90.0476

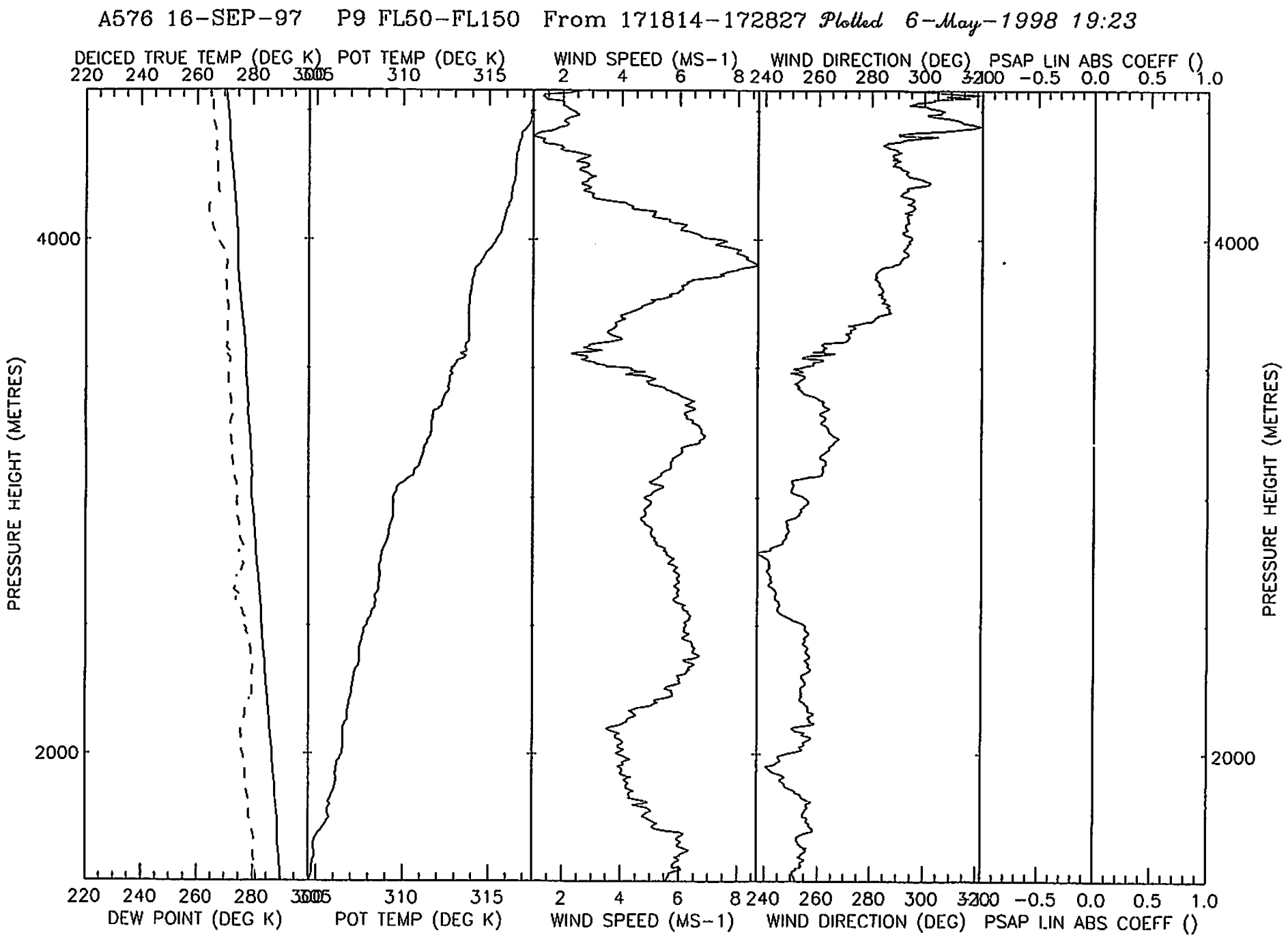
HEADING (DEG)
Mean 13.1769

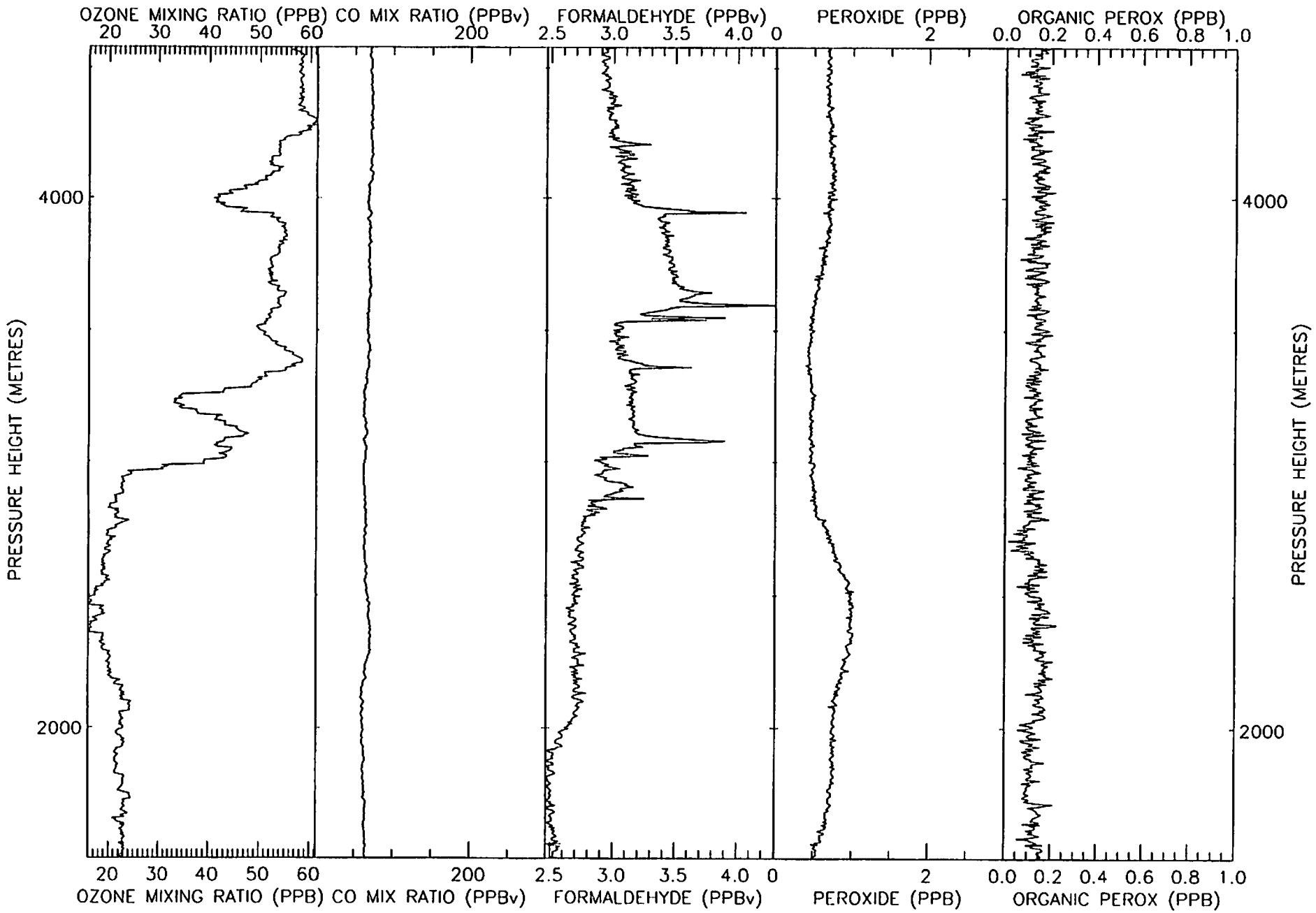

A576 16-SEP-97 P8 FL200-FL50 From 170217-171814 Plotted 6-May-1998 19:21
DEICED TRUE TEMP (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()
220 240 260 280 300
305 310 315 320
2 4 6 8
200
-1.0 -0.5 0.0 0.5 1.0
6000
5000
4000
3000
2000
PRESSURE HEIGHT (METRES)
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

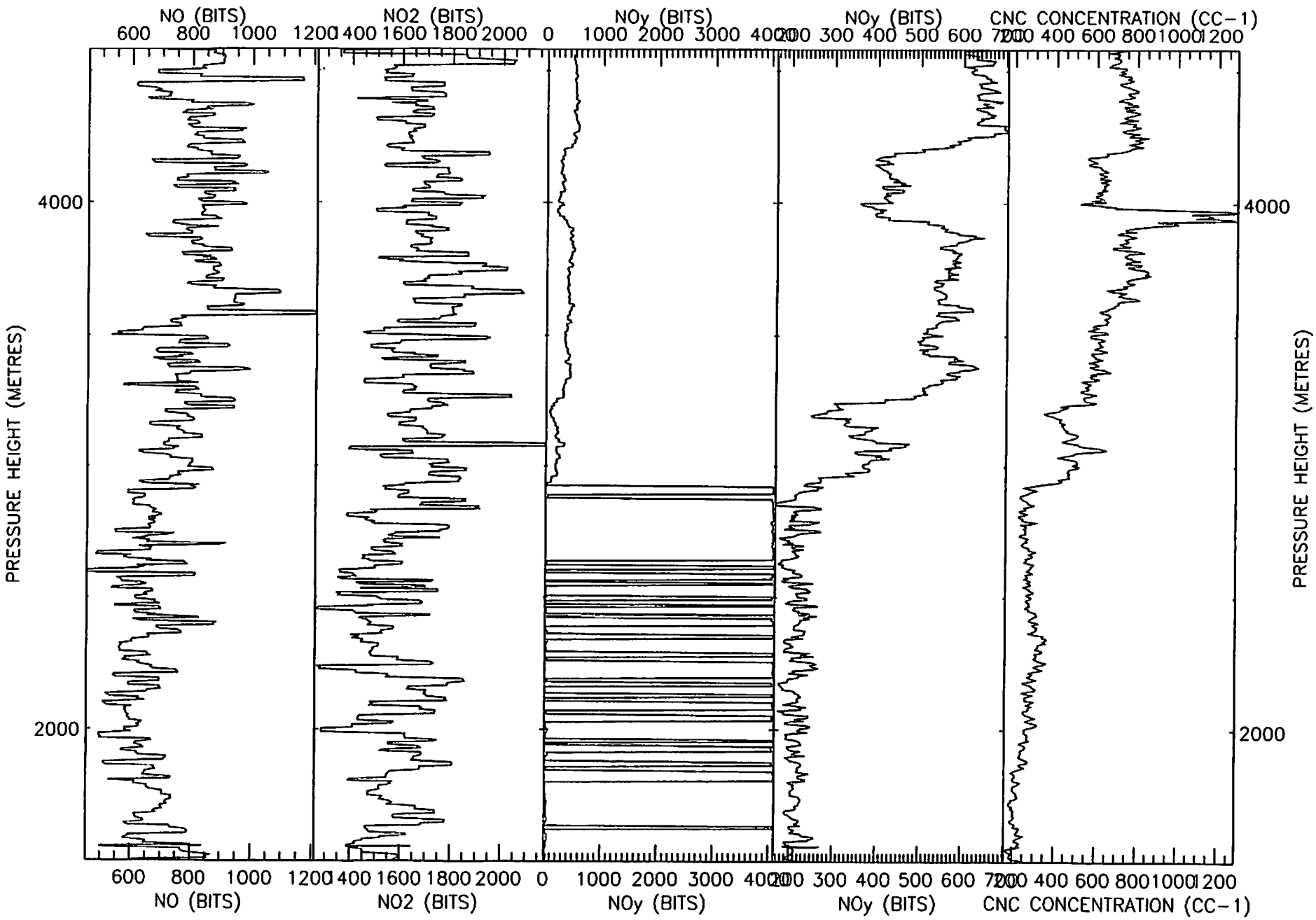

A576 16-SEP-97 P8 FL200-FL50 From 170217-171814 Plotted 6-May-1998 19:21
OZONE MIXING RATIO (PPB)
CO MIX RATIO (PPBv)
FORMALDEHYDE (PPBv)
PEROXIDE (PPB)
ORGANIC PEROX (PPB)
PRESSURE HEIGHT (METRES)
6000
5000
4000
3000
2000
20
40
60
0
200
2.0
2.5
3.0
2
0.0
0.2
0.4
0.6
0.8
1.0

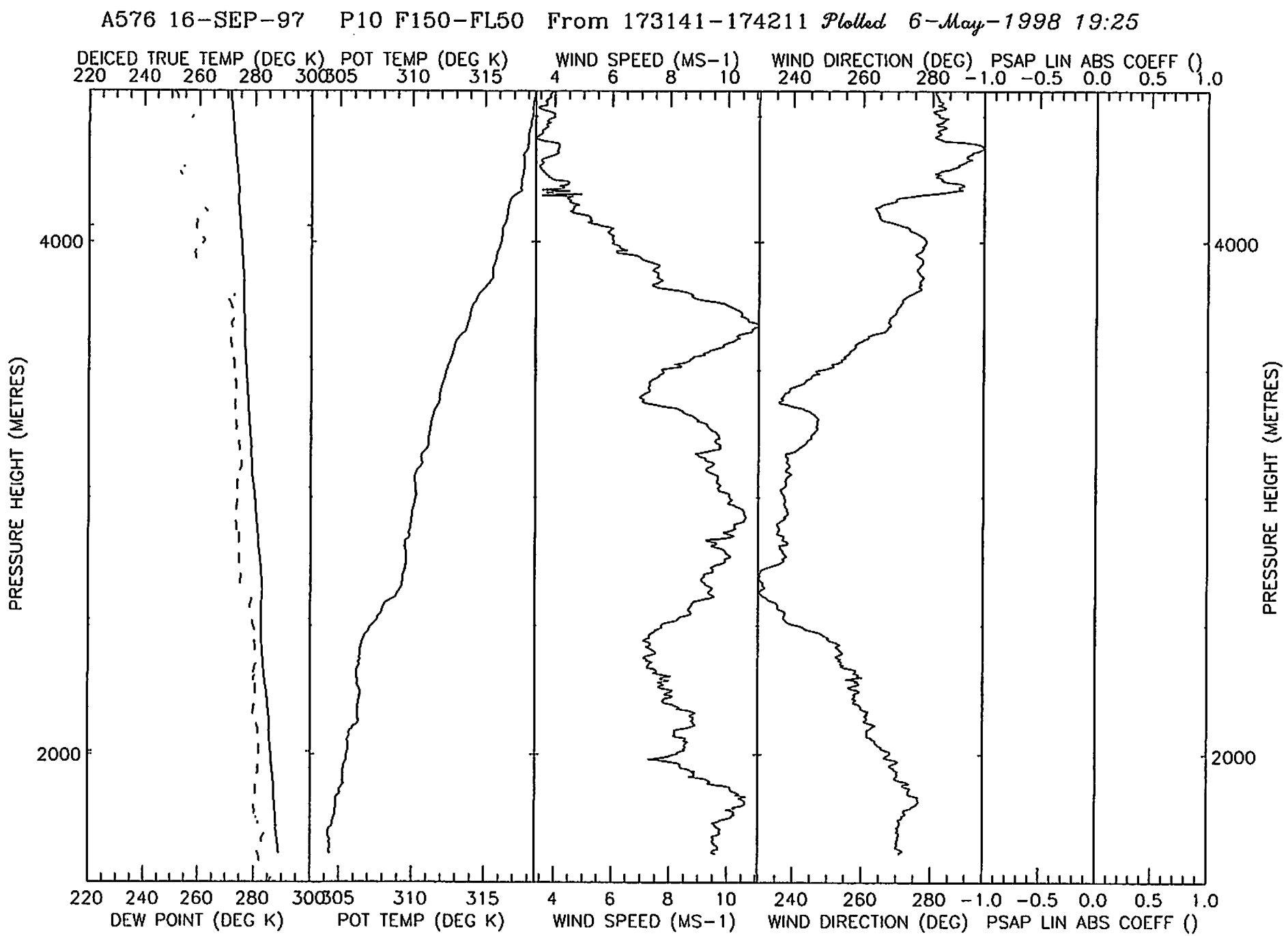
A576 16-SEP-97 P8 FL200-FL50 From 170217-171814 *Plotted 22-May-1998 16:24*

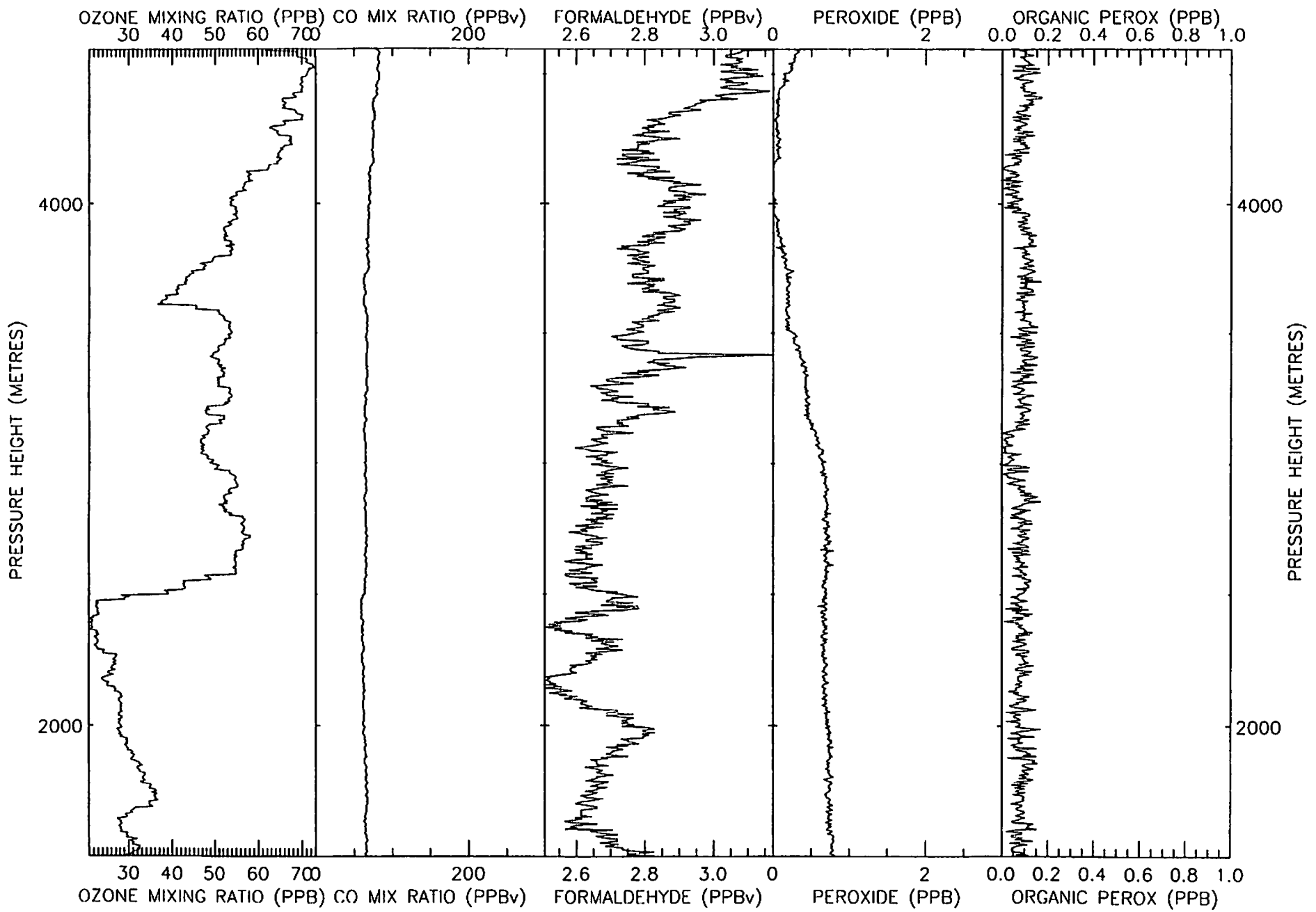



A576 16-SEP-97 P9 FL50-FL150 From 171814-172827 Plotted 6-May-1998 19:23
DEICED TRUE TEMP (DEG K)
220 240 260 280 300
POT TEMP (DEG K)
310 315
WIND SPEED (MS-1)
2 4 6 8
WIND DIRECTION (DEG)
240 260 280 300 320
PSAP LIN ABS COEFF ()
-0.5 0.0 0.5 1.0
4000
2000
PRESSURE HEIGHT (METRES)
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

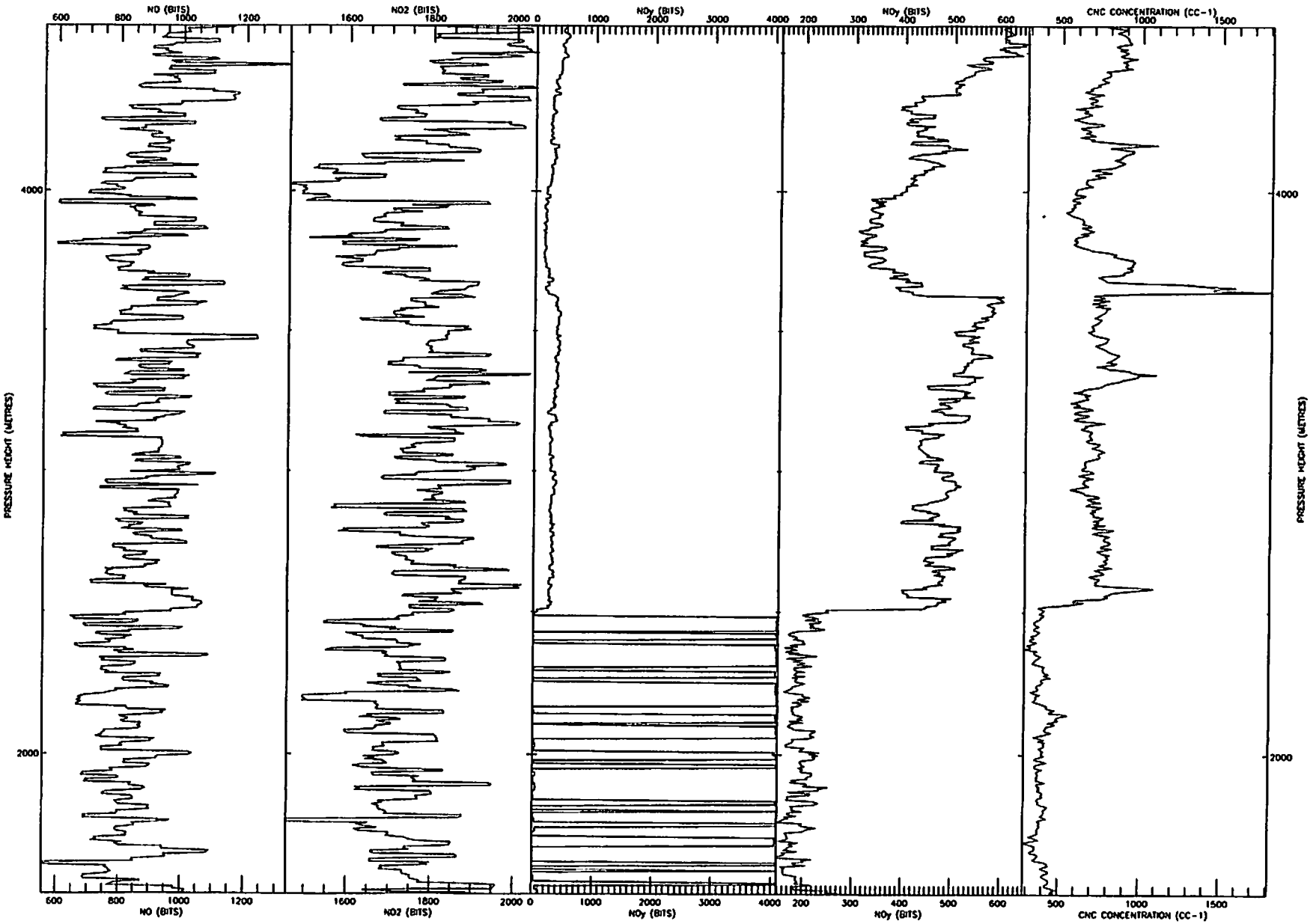

A576 16-SEP-97 P9 FL50-FL150 From 171814-172827 Plotted 6-May-1998 19:23
OZONE MIXING RATIO (PPB)
20 30 40 50 60
CO MIX RATIO (PPBv)
200
FORMALDEHYDE (PPBv)
2.5 3.0 3.5 4.0
PEROXIDE (PPB)
0 2
ORGANIC PEROX (PPB)
0.0 0.2 0.4 0.6 0.8 1.0
PRESSURE HEIGHT (METRES)
4000
2000

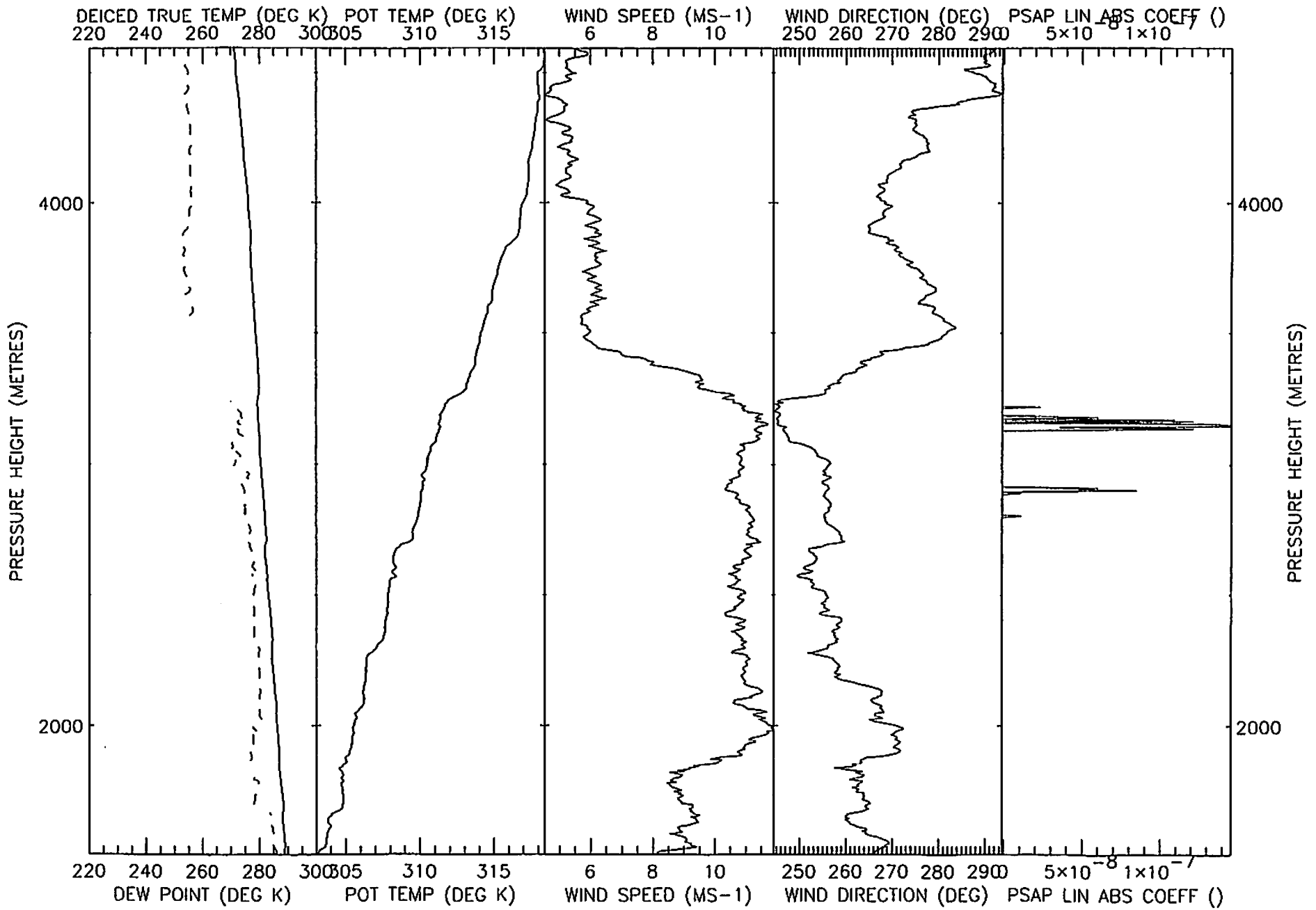

A576 16-SEP-97 P9 FL50-FL150 From 171814-172827 Plotted 27-May-1998 09:21
NO (BITS)
600 800 1000 1200
NO2 (BITS)
400 1600 1800 2000
NOy (BITS)
0 1000 2000 3000 4000
NOy (BITS)
200 300 400 500 600 700
CNC CONCENTRATION (CC-1)
200 400 600 800 1000 1200
4000
2000
PRESSURE HEIGHT (METRES)
PRESSURE HEIGHT (METRES)
600 800 1000 1200
NO (BITS)
400 1600 1800 2000
NO2 (BITS)
0 1000 2000 3000 4000
NOy (BITS)
200 300 400 500 600 700
NOy (BITS)
200 400 600 800 1000 1200
CNC CONCENTRATION (CC-1)


A576 16-SEP-97 P10 F150-FL50 From 173141-174211 Plotted 6-May-1998 19:25
DEICED TRUE TEMP (DEG K)
220 240 260 280 300
POT TEMP (DEG K)
305 310 315
WIND SPEED (MS-1)
4 6 8 10
WIND DIRECTION (DEG)
240 260 280
PSAP LIN ABS COEFF ()
-1.0 -0.5 0.0 0.5 1.0
PRESSURE HEIGHT (METRES)
4000
2000
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

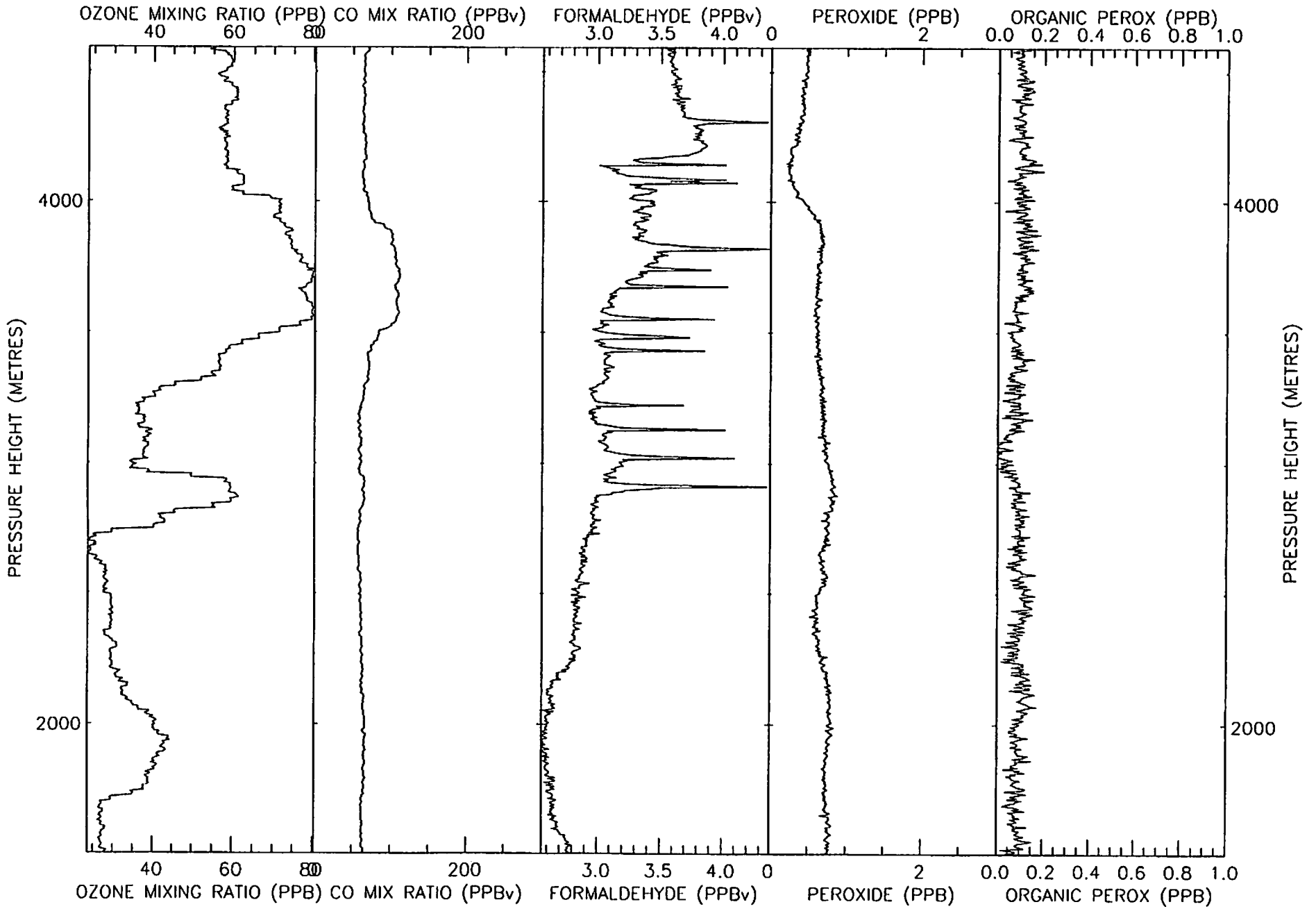

A576 16-SEP-97 P10 F150-FL50 From 173141-174211 Plotted 6-May-1998 19:25
OZONE MIXING RATIO (PPB)
30 40 50 60 700
CO MIX RATIO (PPBv)
200
FORMALDEHYDE (PPBv)
2.6 2.8 3.0
PEROXIDE (PPB)
0 2
ORGANIC PEROX (PPB)
0.0 0.2 0.4 0.6 0.8 1.0
PRESSURE HEIGHT (METRES)
4000
2000

A576 16-SEP-97 P10 F150-FL50 From 173141-174211 *Plotted 27-May-1998 09:24*

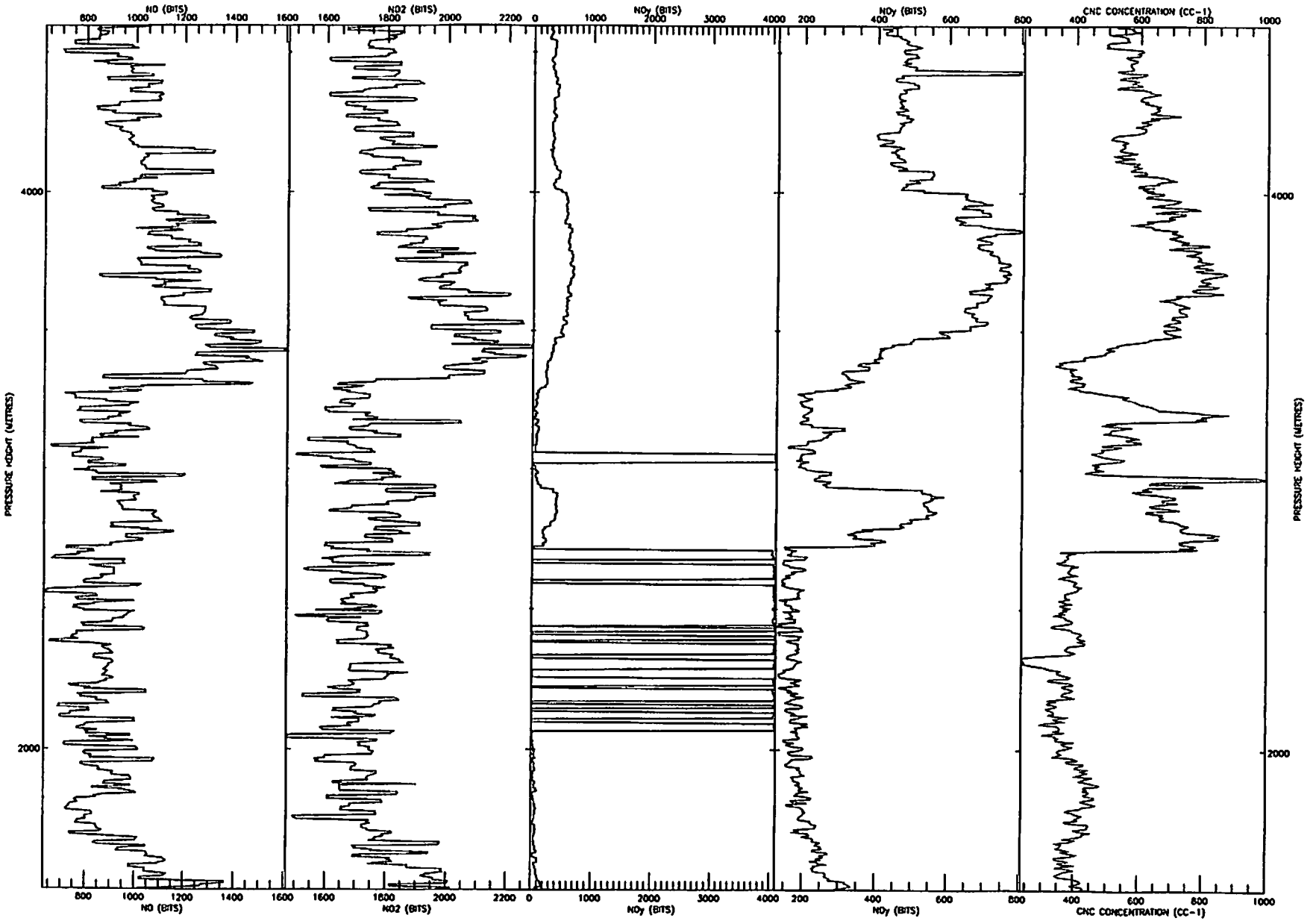



A576 16-SEP-97 P11 FL50-FL150 From 174211-175252 Plotted 6-May-1998 19:28
DEICED TRUE TEMP (DEG K)
220 240 260 280 300
POT TEMP (DEG K)
305 310 315
WIND SPEED (MS-1)
6 8 10
WIND DIRECTION (DEG)
250 260 270 280 290
PSAP LIN ABS COEFF ()
5×10-8 1×10-7
PRESSURE HEIGHT (METRES)
4000
2000
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

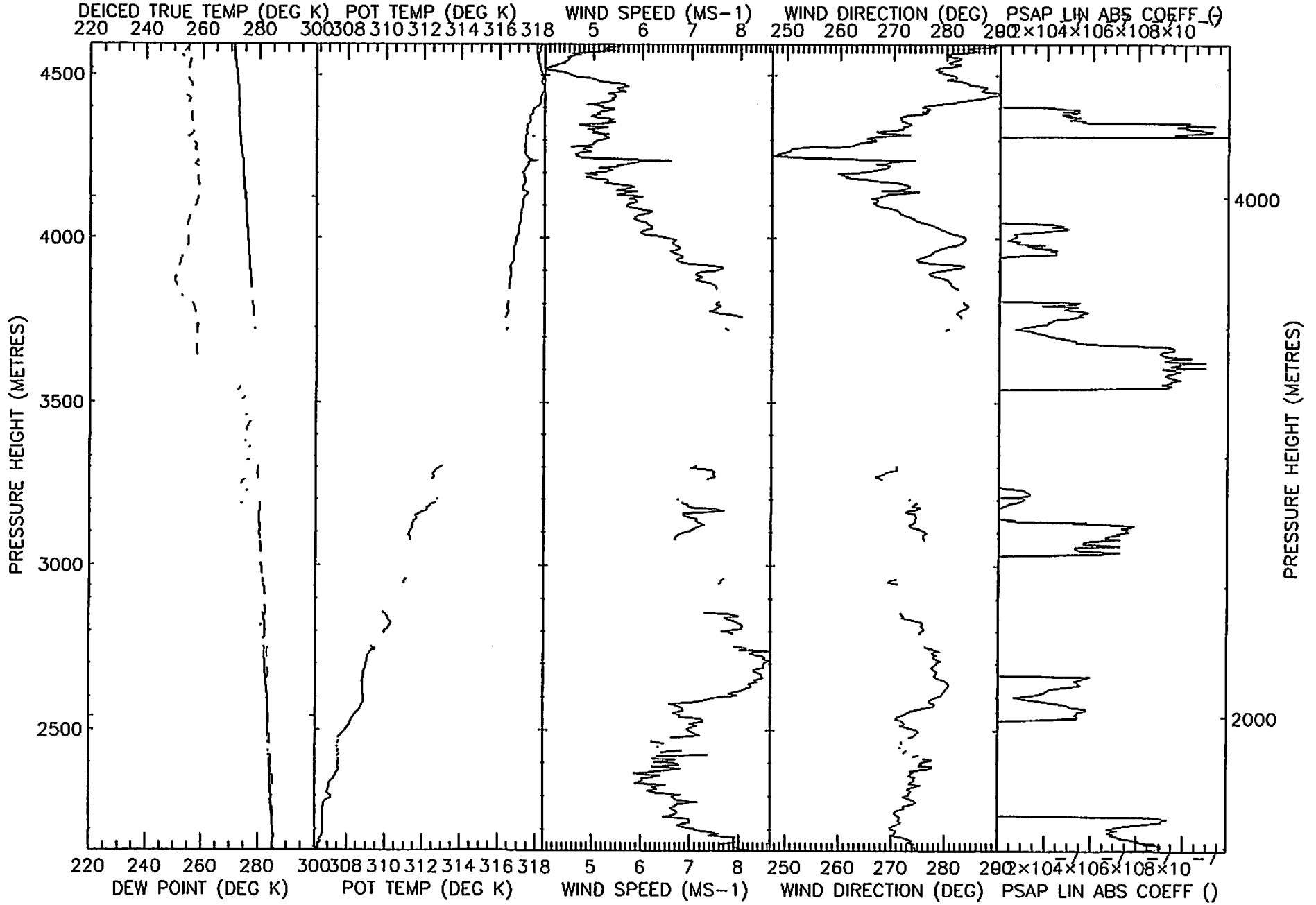
A576 16-SEP-97 P11 FL50-FL150 From 174211-175252 *Plotted 6-May-1998 19:28*



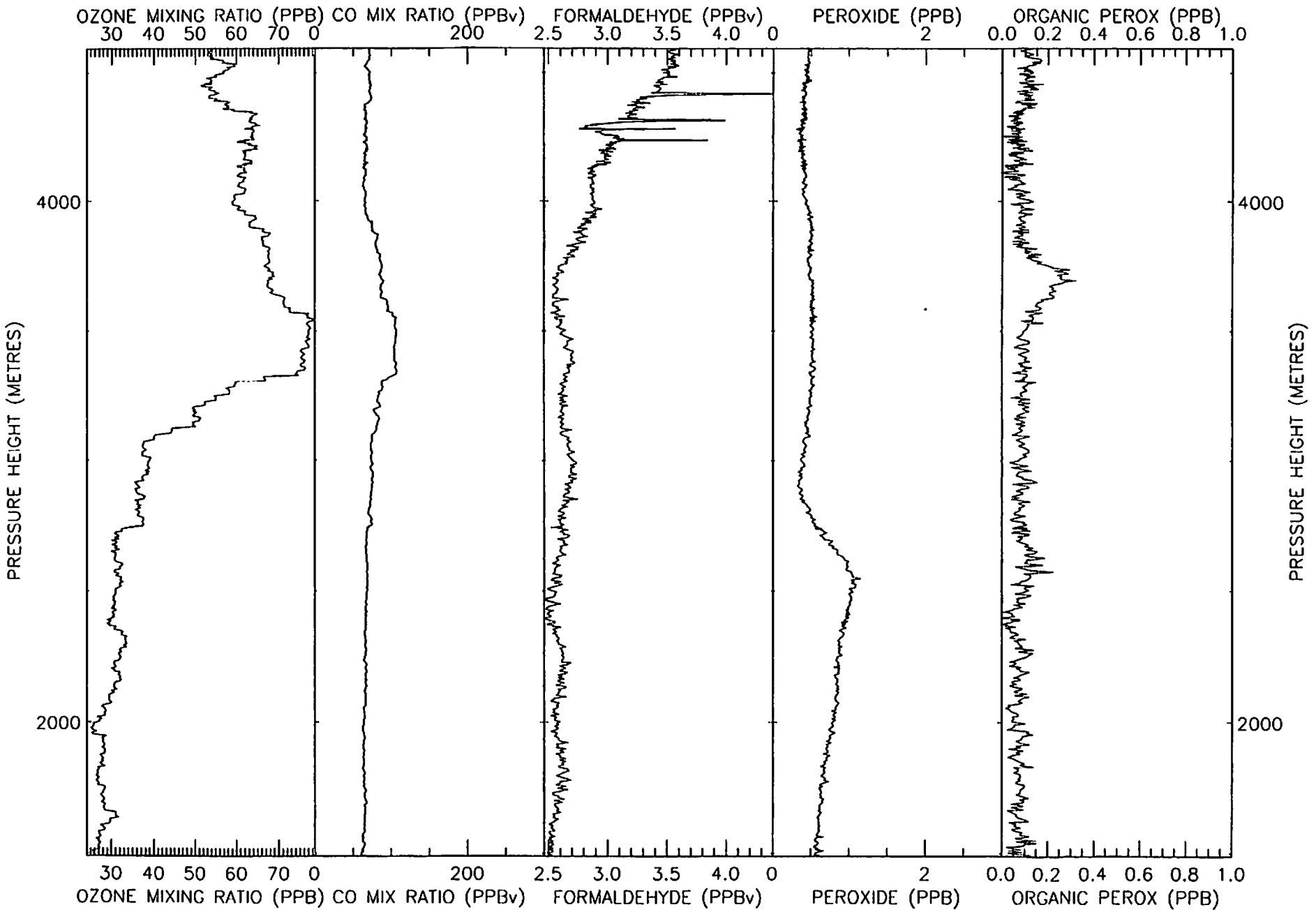
A576 16-SEP-97 P11 FL50-FL150 From 174211-175252 *Plotted 27-May-1998 09:27*



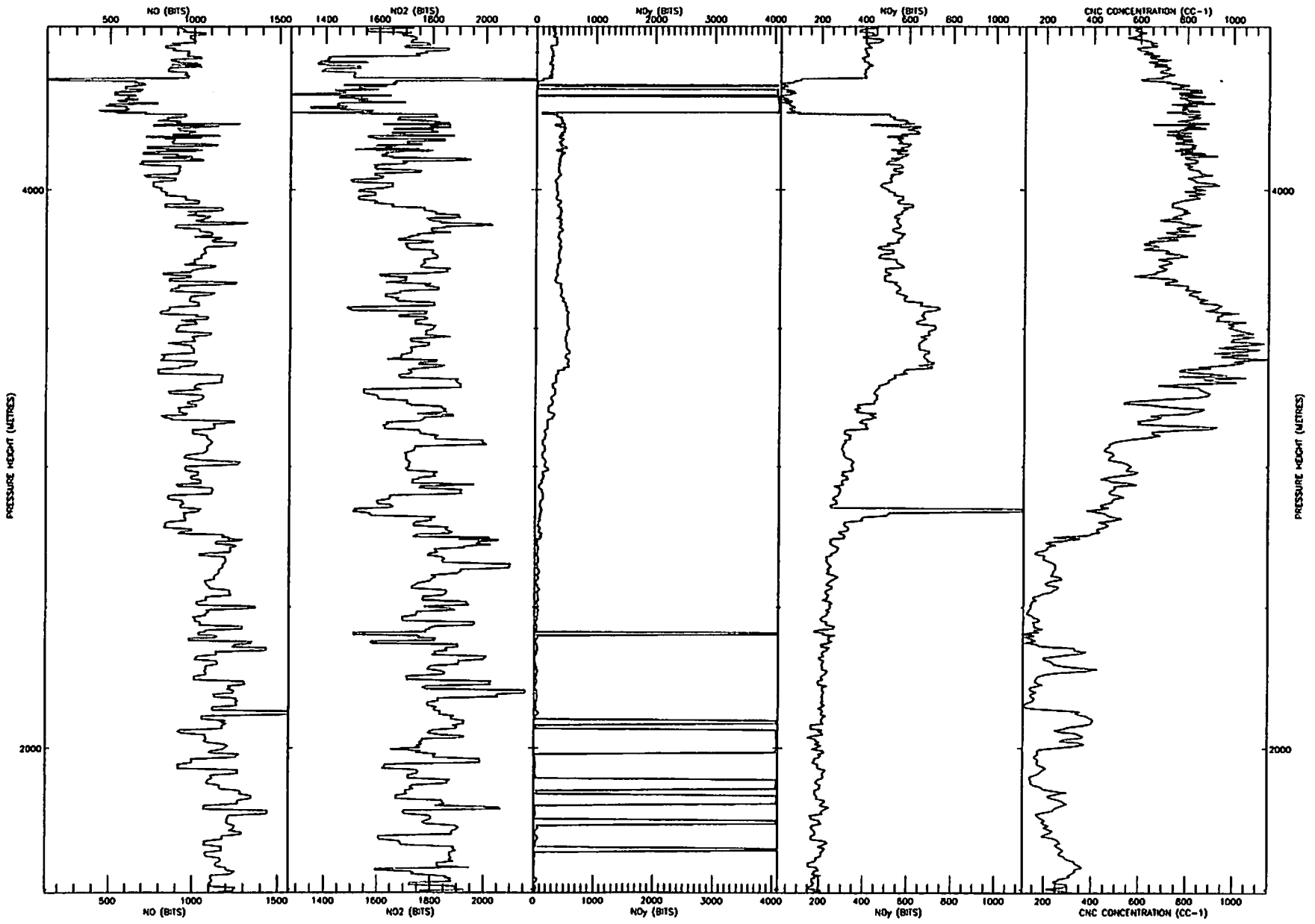
A576 16-SEP-97 P12 FL150-FL50 From 175252-180440 *Plotted 6-May-1998 19:30*

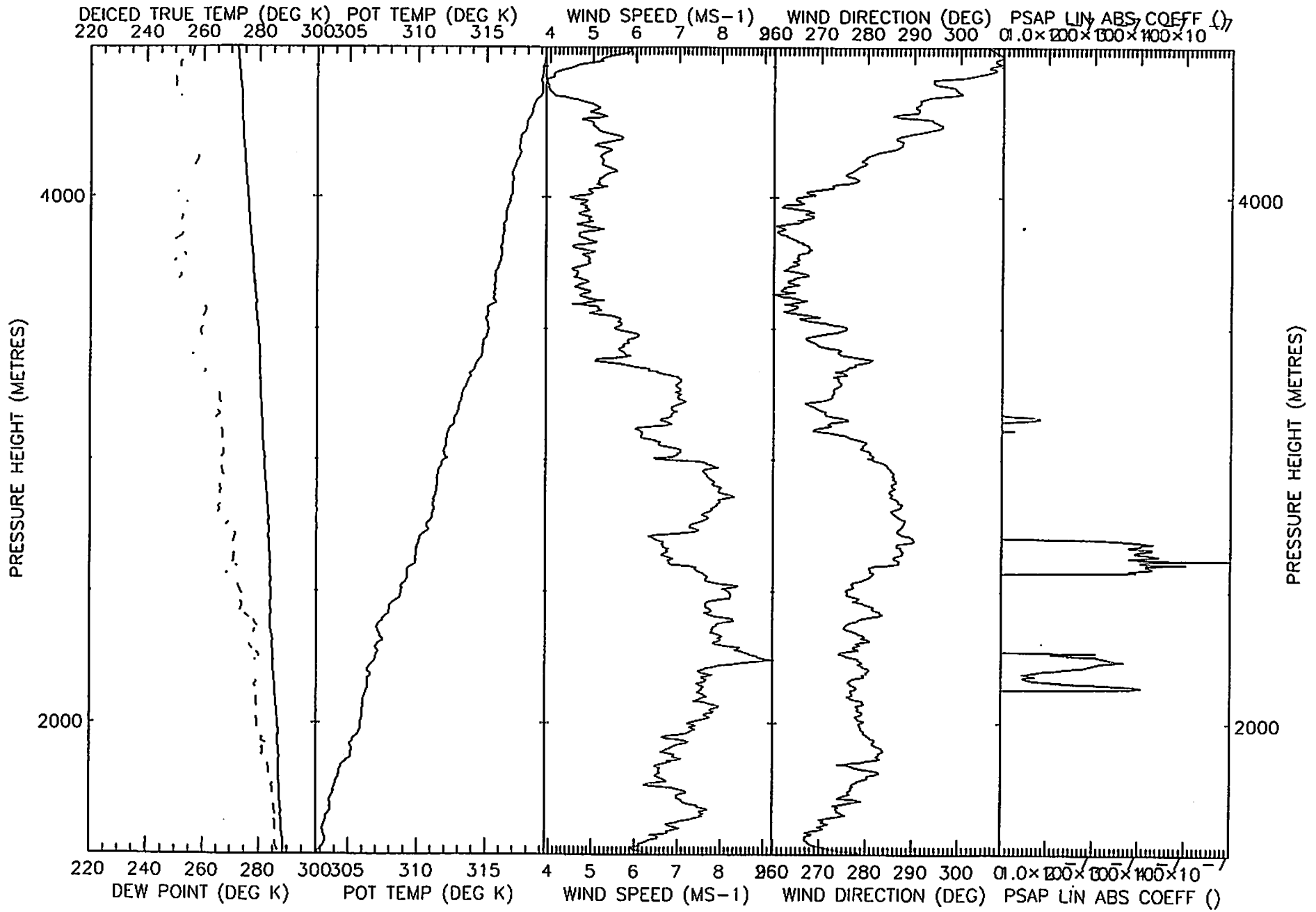


A576 16-SEP-97 P12 FL150-FL50 From 175252-180440 *Plotted 6-May-1998 19:30*

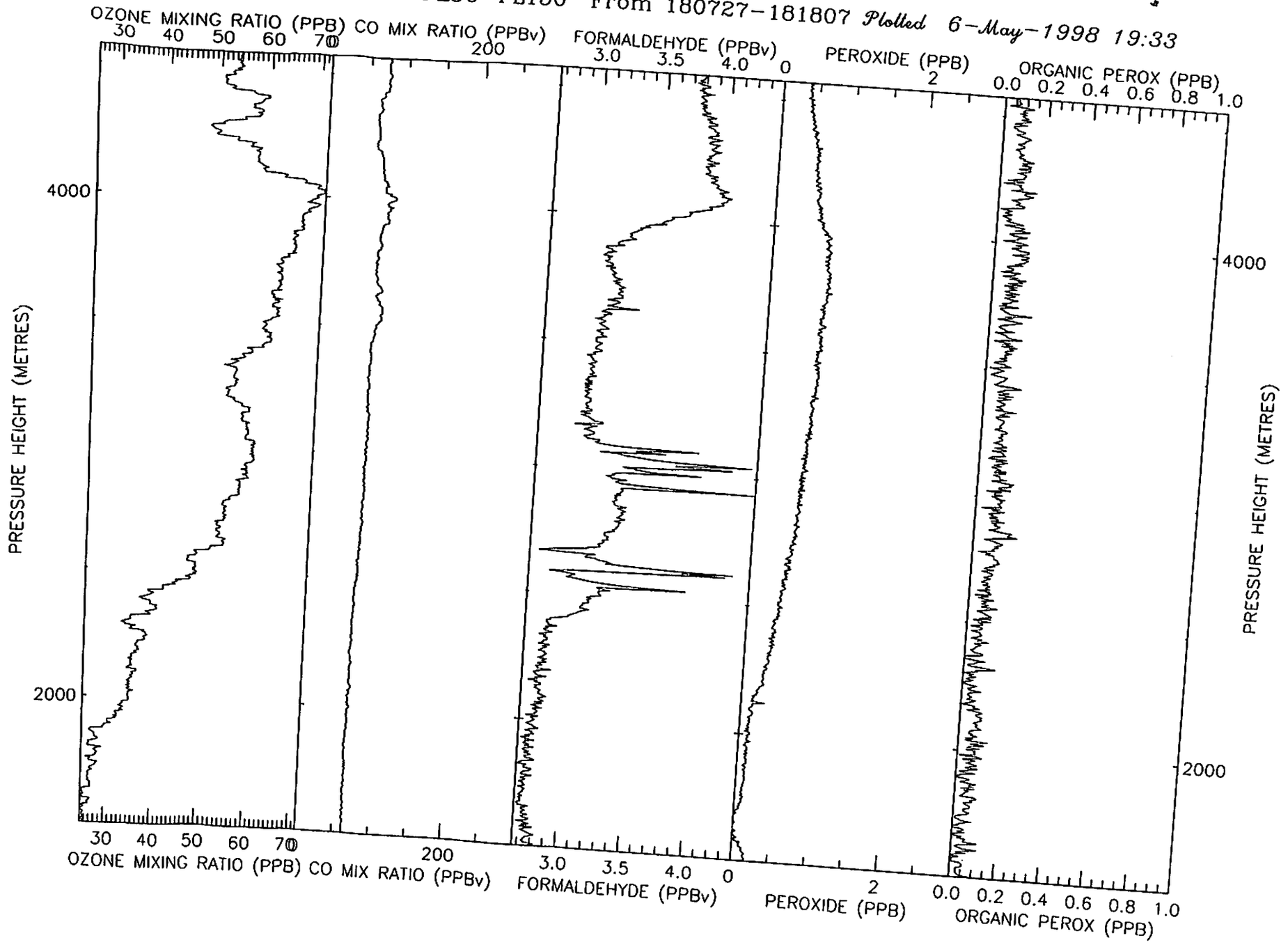


A576 16-SEP-97 P12 FL150-FL50 From 175252-180440 *Plotted 27-May-1998 09:31*

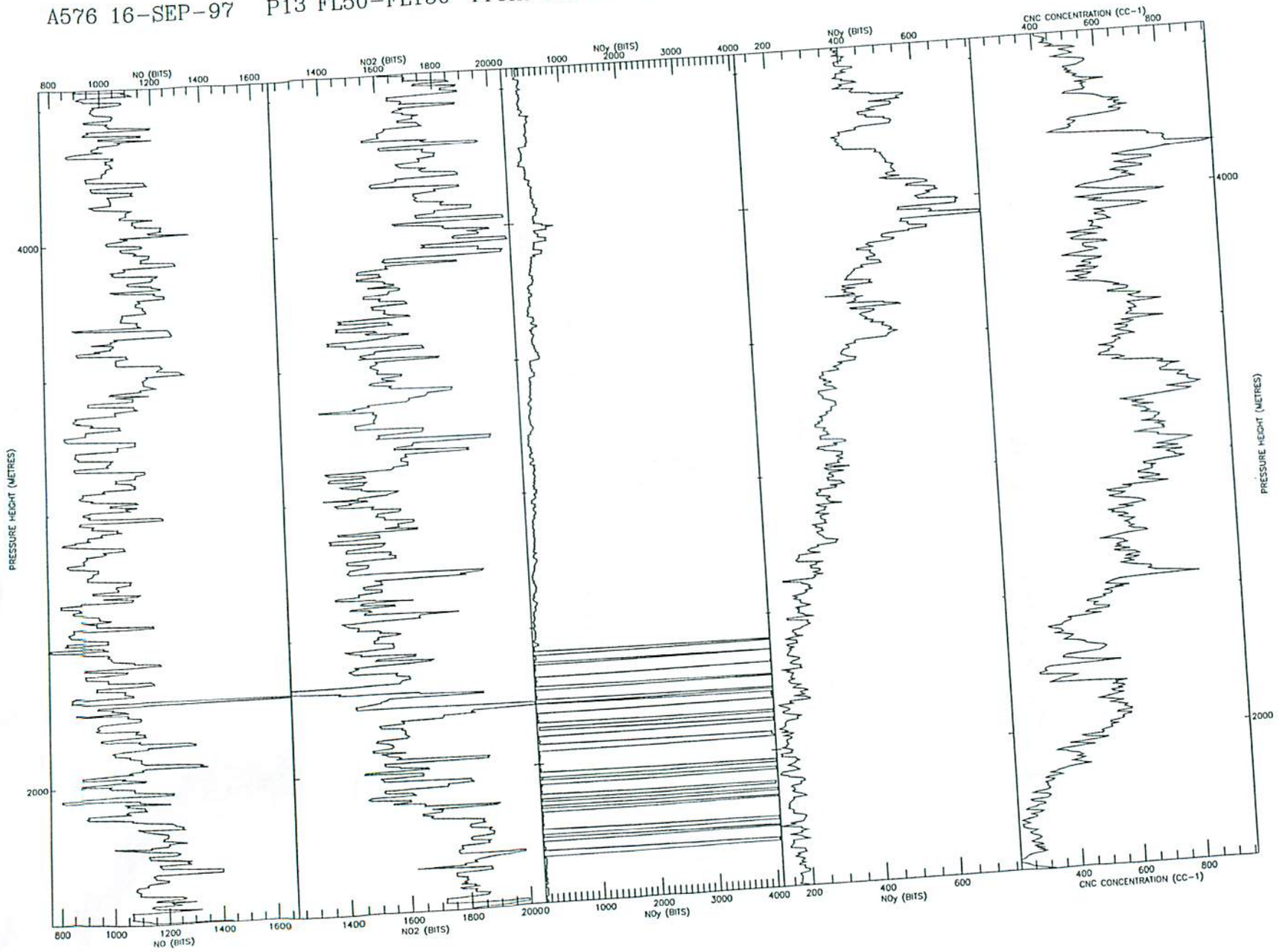



A576 16-SEP-97 P13 FL50-FL150 From 180727-181807 Plotted 6-May-1998 19:33
DEICED TRUE TEMP (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()
220 240 260 280 300
305 310 315
4 5 6 7 8
260 270 280 290 300
0 1.0×10⁻⁷ 2.0×10⁻⁷ 3.0×10⁻⁷ 4.0×10⁻⁷ 5.0×10⁻⁷
PRESSURE HEIGHT (METRES)
4000
2000
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

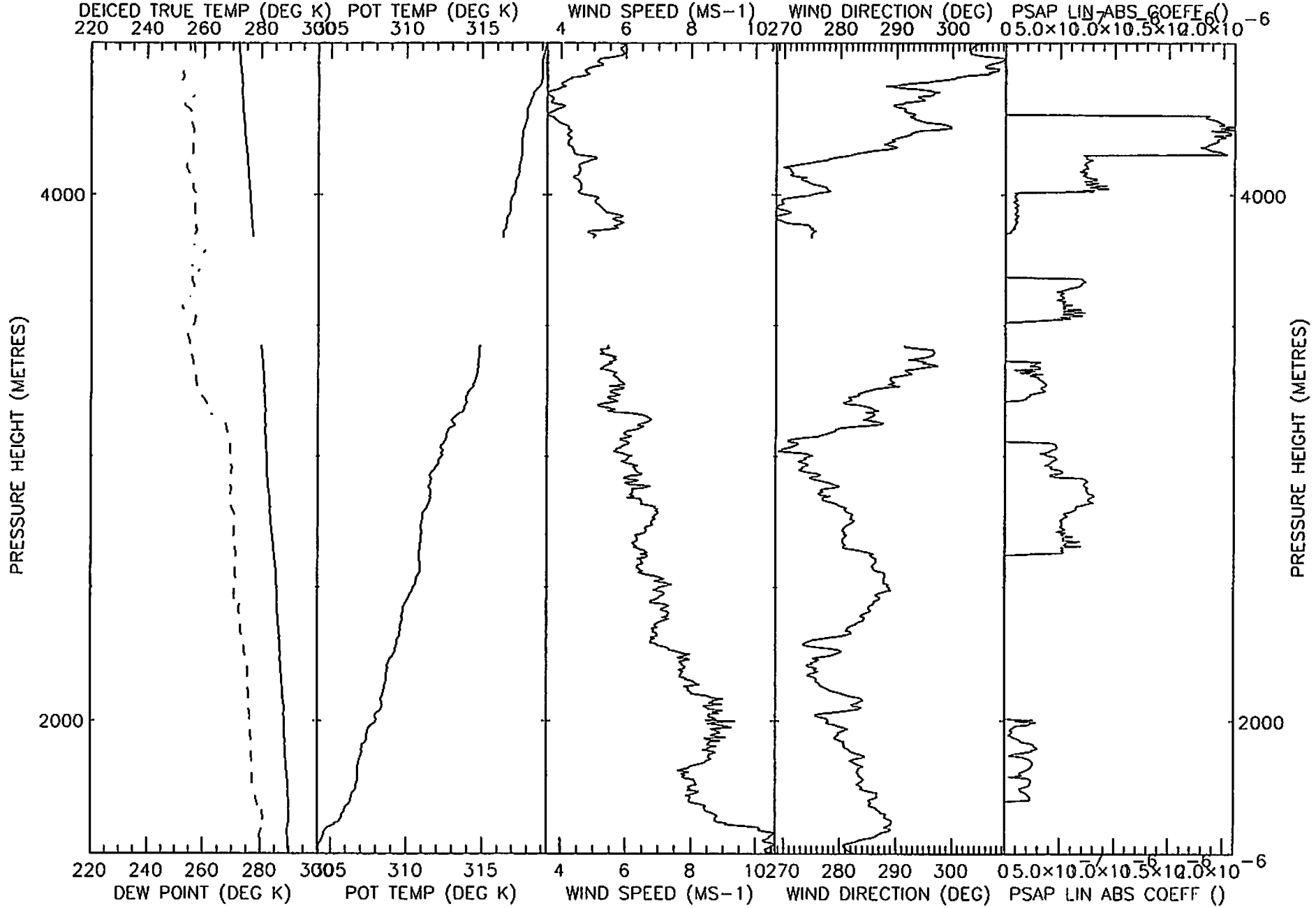
A576 16-SEP-97 P13 FL50-FL150 From 180727-181807 Plotted 6-May-1998 19:33



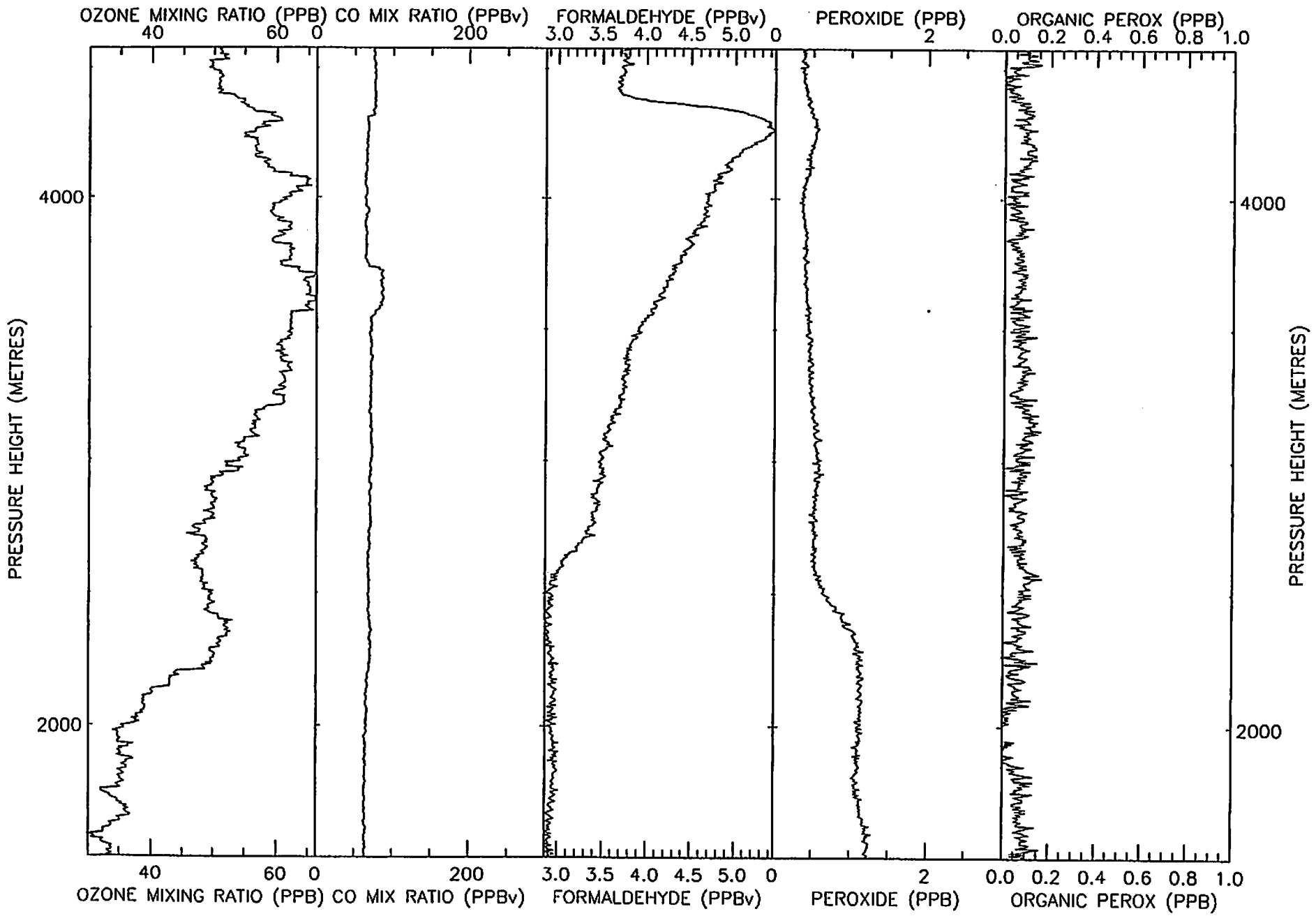
A576 16-SEP-97 P13 FL50-FL150 From 180727-181807 *Plotted 27-May-1998 09:34*



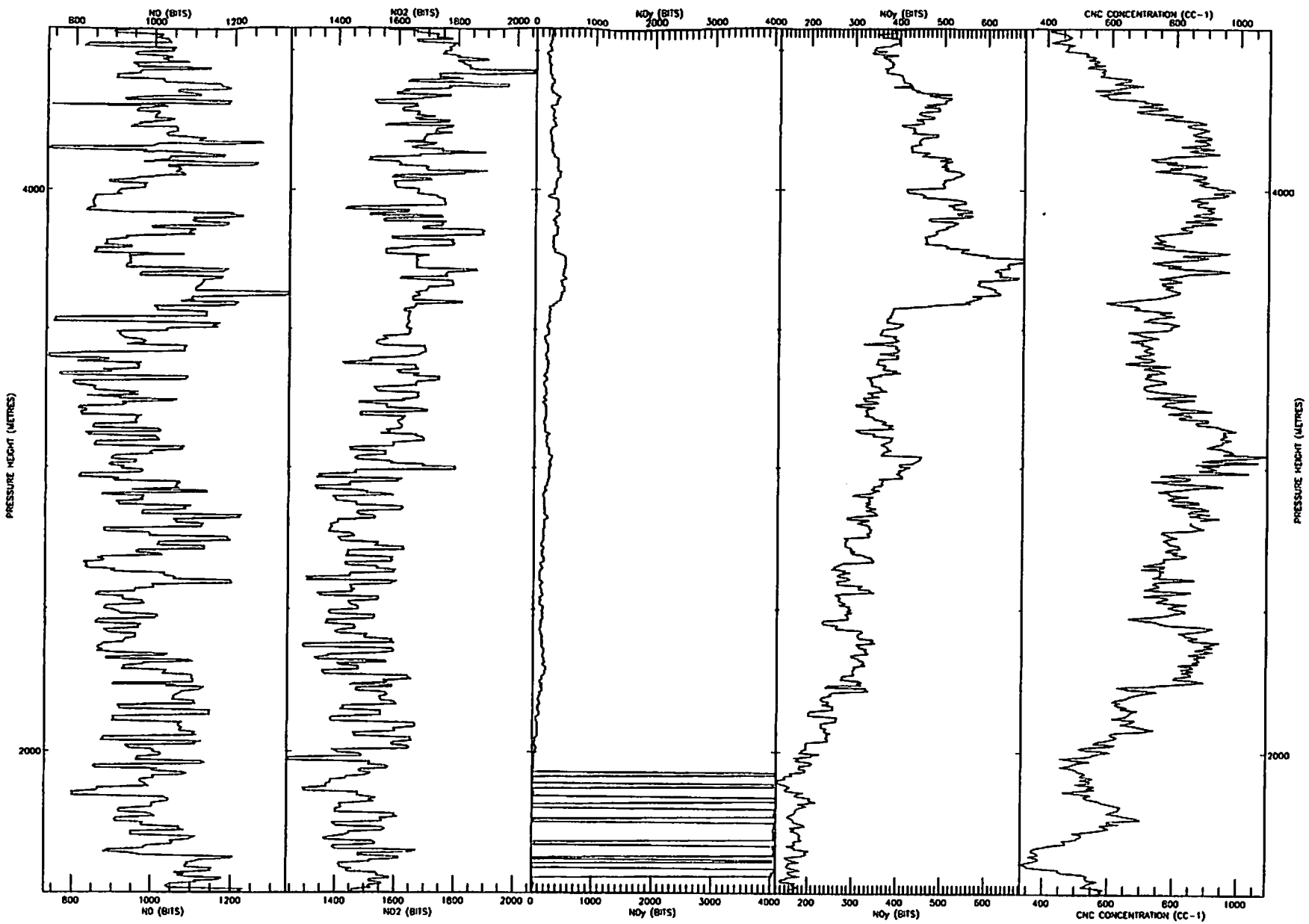
A576 16-SEP-97 P14 FL150-FL50 From 181807-182818 *Plotted 6-May-1998 19:35*

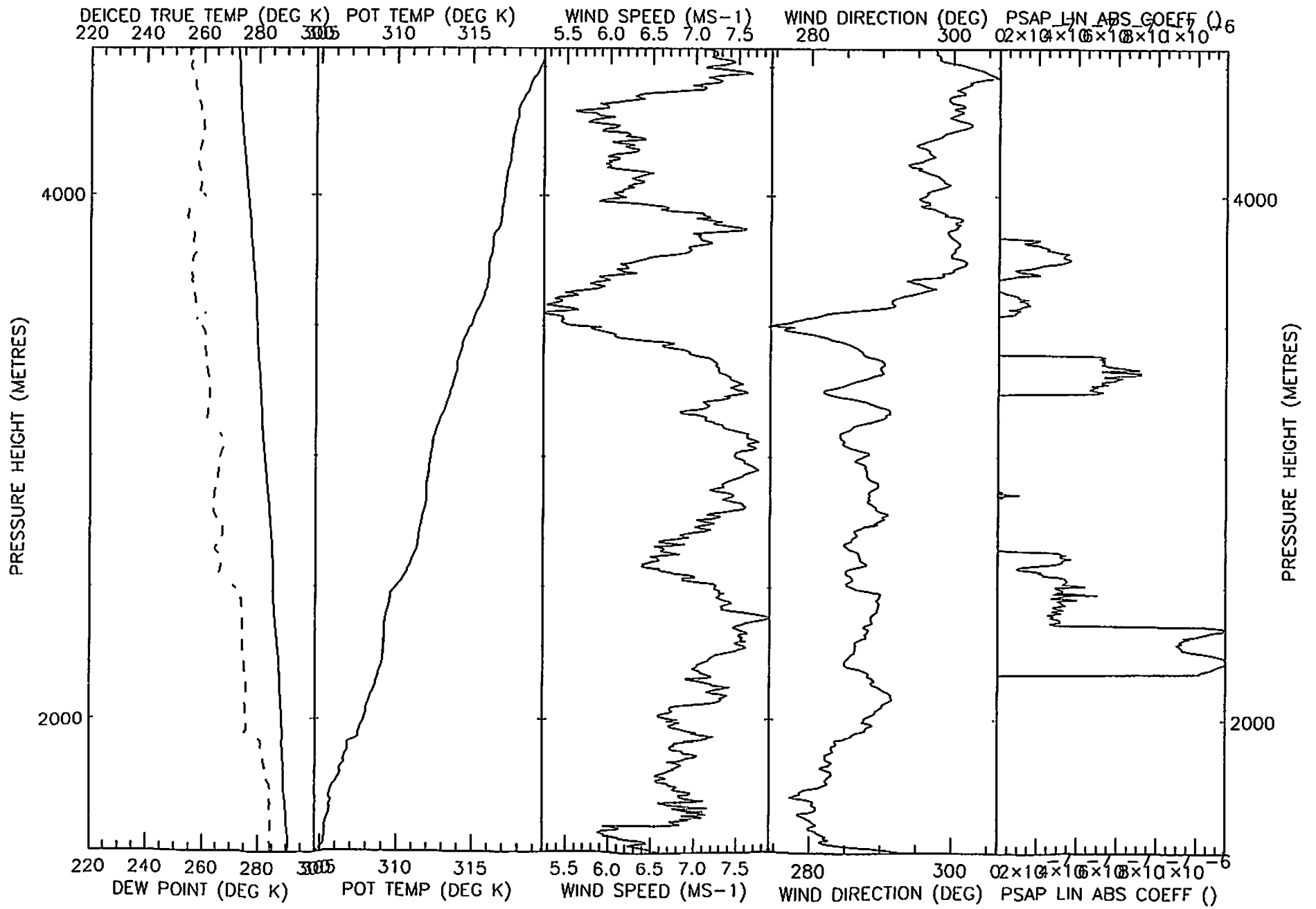


A576 16-SEP-97 P14 FL150-FL50 From 181807-182818 *Plotted 6-May-1998 19:35*

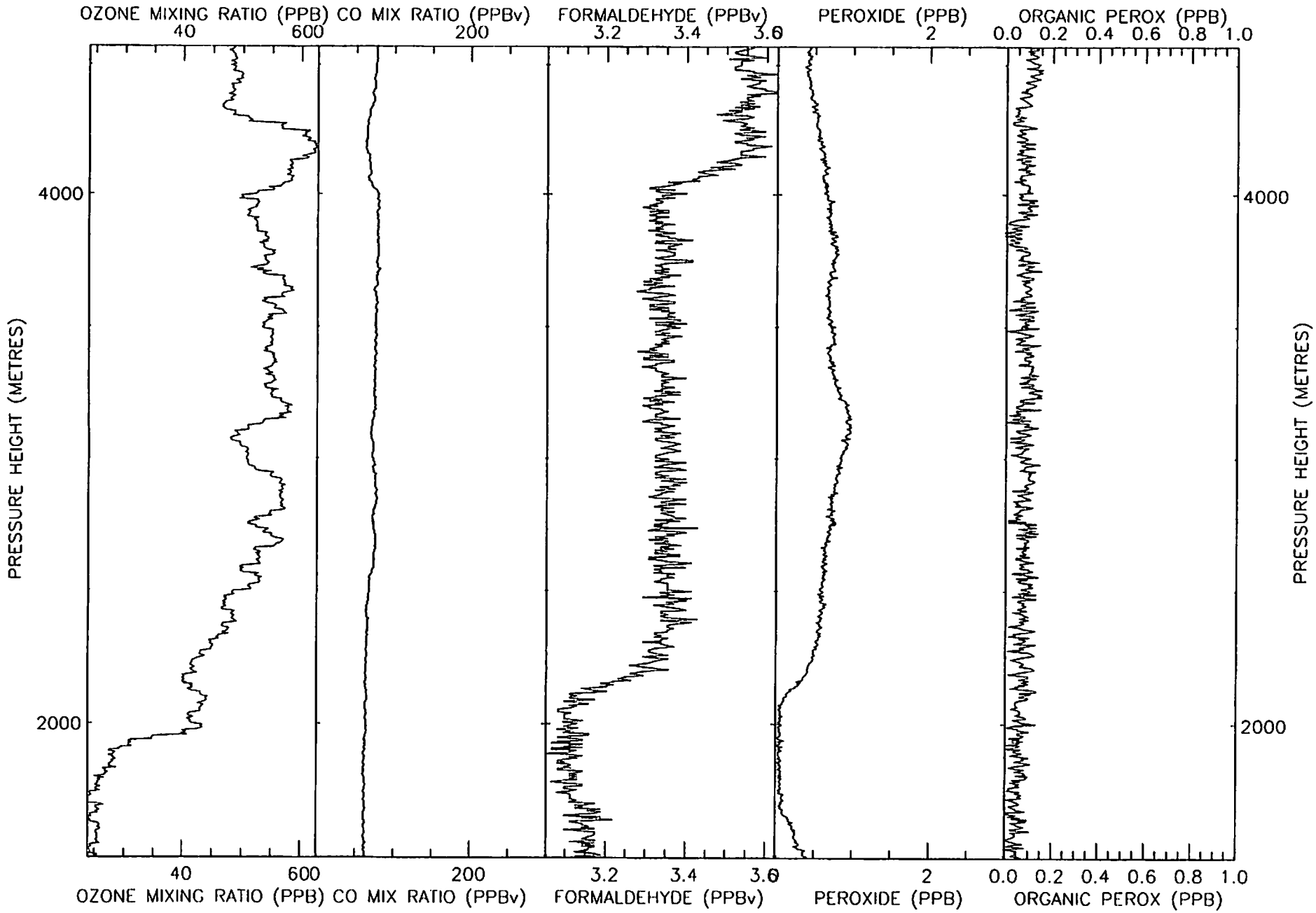


A576 16-SEP-97 P14 FL150-FL50 From 181807-182818 *Plotted 27-May-1998 09:37*

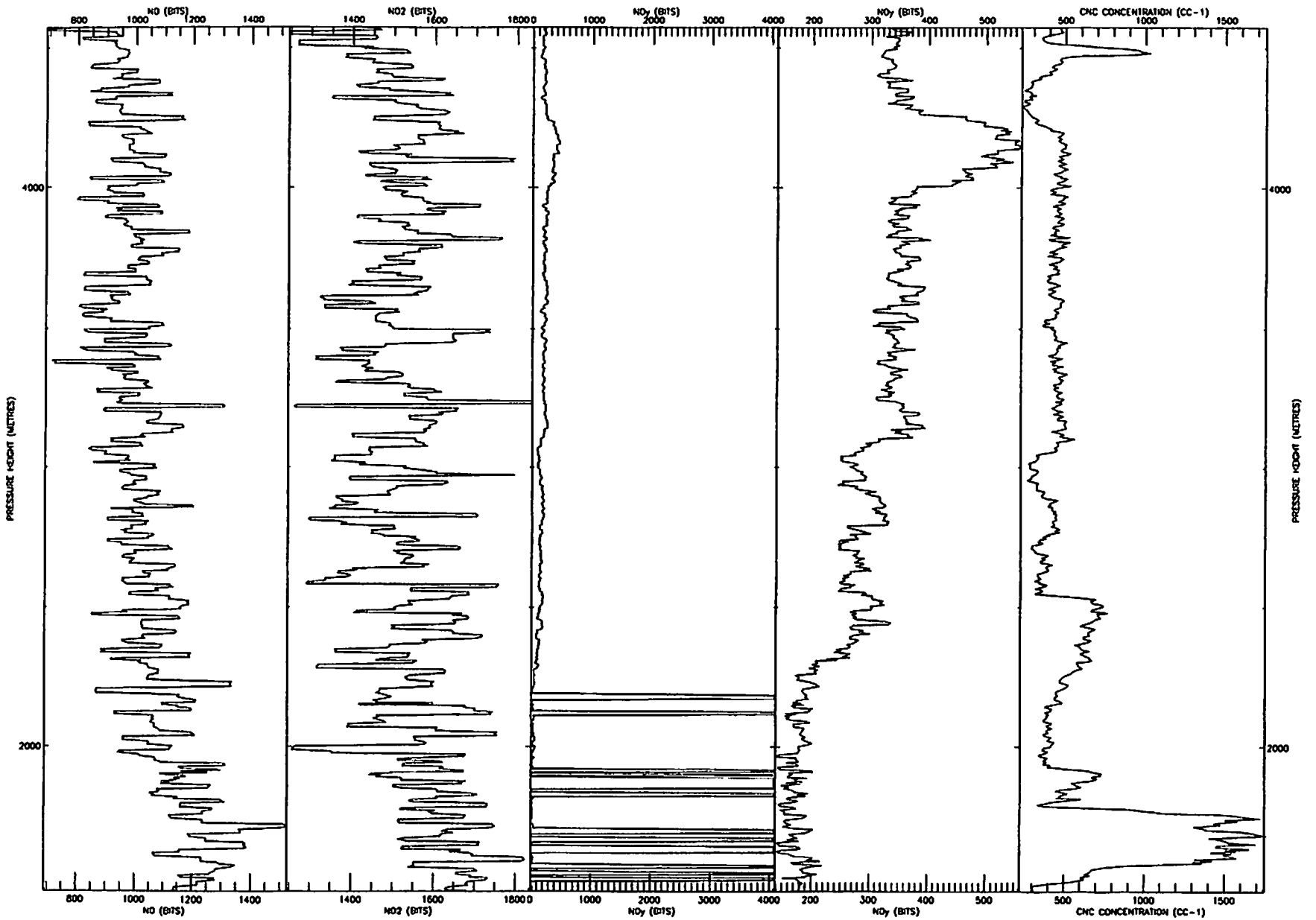



A576 16-SEP-97 P15 FL50-FL150 From 183040-184102 Plotted 6-May-1998 19:37
DEICED TRUE TEMP (DEG K)
220 240 260 280
POT TEMP (DEG K)
310 315
WIND SPEED (MS-1)
5.5 6.0 6.5 7.0 7.5
WIND DIRECTION (DEG)
280 300
PSAP LIN ABS COEFF ()
4000
2000
PRESSURE HEIGHT (METRES)
DEW POINT (DEG K)
POT TEMP (DEG K)
WIND SPEED (MS-1)
WIND DIRECTION (DEG)
PSAP LIN ABS COEFF ()

A576 16-SEP-97 P15 FL50-FL150 From 183040-184102 *Plotted 6-May-1998 19:37*



A576 16-SEP-97 P15 FL50-FL150 From 183040-184102 *Plotted 27-May-1998 09:41*



Glossary

Aircraft Position, Speed and Attitude

- **Navigation:** The aircraft carries GPS, OMEGA, and inertial navigation systems.
- **Pressure height:** is based on the standard atmosphere as specified by the International Civil Aviation Organisation (sea level pressure of 1013.25 hPa). Pressure height is quoted in terms of Flight Levels (height in hundreds of feet *e.g.* FL100 = 10000 feet).
- **Radar height:** altitude of the aircraft above surface, measured by radar.
- **Time:** All times are UTC.

General meteorology

- **Tephigrams:** are given for every major profile of each flight. A tephigram is a thermodynamic diagram (temperature (T) - entropy (ϕ) diagram) used to assess the static stability of a given atmospheric profile. Other meteorological organisations use similar diagrams such as the Emagram or the Skew T log p diagram.
- **Deiced true temperature:** air temperature with corrections for aircraft speed and altitude.
- **Potential temperature:** the temperature that a parcel of air would have if it follows a dry adiabatic lapse rate to the 1000 hPa level.
- **Dew point:** dew point (the temperature at which a sample of air would just become saturated with respect to a plane surface of water if cooled at a constant pressure) calculated from the chilled mirror General Eastern hygrometer.

Particle Data

- **CNC:** Condensation nucleus counter (this data is provisional and requires further validation). The measurement is from a commercial instrument: TSI INC Model 3025A. Although CNC data were recorded on the flight no post flight processing has been carried out. Rather than delay this booklet further, I have decided to wait and process the data when the validation has been carried out by the cloud physics group.
- **PSAP:** The Radiance Research Particle Soot Absorption Photometer gives a measurement of optical absorption by black carbon, using a quartz filter with the absorption measured at 565 nm.

Chemistry Parameters

- **Ozone:** Calibrated readings from the TECO 49 ozone analyser in ppb. Instrument scientist: Joss Kent and Ken Dewey (UK Met. Office).

- **JNO_2:** The sum of upward and downward facing radiometers (data not quality controlled). Instrument scientists: Christoph Gerbig and Sandra Schmitgen (FZ Jülich).

- **Hydrogen peroxide:** Raw data recorded in ppb (approx.). Instrument scientist: Brian Bandy (UEA Norwich).

- **Organic peroxide:** Raw data recorded in ppb (approx.). Instrument scientist: Brian Bandy (UEA Norwich).

- **Formaldehyde:** Raw data (approx) converted to ppb using approximate scale factor and offset. Instrument scientist: Graham Mills (UEA, Norwich).

- **NOxy:** Parameters (NO, NO_2, NO_{yl}) were recorded on MRF's data recording system and are plotted in bits. Only one NOy channel was available for this flight. Instrument scientist: Stephane Bauguitte (UEA, Norwich).

- **Bottles:** Please refer to the bottle flight logs (within the flight folder section) to see when these were filled. Analysis carried out at NILU.

- **CO:** Approximate data in ppb from the DRS. Instrument scientist: Sandra Schmitgen (fz-Jülich).

Natural Environment Research Council

ARASF

For more information contact:

Met. Research Flight
Y46 Building, D.E.R.A.
Farnborough, Hants GU14 6TD

Fax: +44 (0) 1252-376588

Dr. Andrew Kaye
NERC Scientific Liaison
Tel: +44 (0) 1252-395843
E-mail: A.Kaye@nerc.ac.uk

Dr. Hannah Richer
Tel: +44 (0) 1252-395830
E-mail: hricher@meto.gov.uk

Mr. Illyea Hawke
Tel: +44 (0) 1252-395840
E-mail: idhawke@meto.gov.uk

METEOROLOGICAL OFFICE